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# THE Ophthalmoscope

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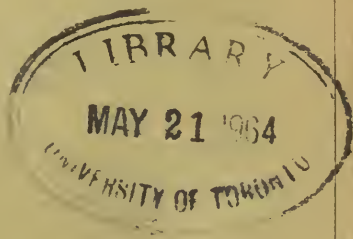
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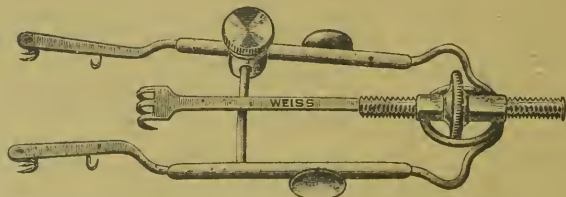
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## A Retractor for Use in Excision of the Lacrymal Sac.



Mr. N. BISHOP HARMAN, M.B., F.R.C.S. (London), writes: Some form of retractor is almost a necessity in performing excision of the lacrymal sac, first, to open out the incision, which is awkwardly situated in a narrow place between the inner canthus of the lids and the side of the nose, and, secondly, because efficient traction on the tissues provides the best means of checking bleeding. At present Müller's and Axenfeld's tractors are those most generally used. Müller's is neat and convenient in form, but not sufficiently powerful as a haemostat. Axenfeld's is large and clumsy, but very efficient as a haemostat; yet it has a serious drawback in that its large claws drag the wound open vertically, and the upper claw is greatly in the surgeon's way in removing the upper *cul de sac* of the main sac, the complete removal of which is essential to the success of the operation. The instrument shown in the cut combines the actions of these two forms of retractors. The frame is that of Müller, and is no larger than his neat model, but, by an alteration of the prongs at the extremity of the laterally acting blades, and the addition of a claw (something like an old-fashioned "back-scratcher") which can be drawn back by the milled nut at the spring end of the frame, this retractor will exert the powerful tractor action of Axenfeld's instrument, and yet leave the upper end of the site of the operation free. In inserting the new retractor the instrument should be first closed, the blades approximated, and locked by a turn of the side check-screw and the long claw pushed home to just behind the side prongs of the lateral blades. The claws are inserted into the wound just as in using Müller's instrument. Now the side check-screw is released, and the blades being forced apart by the spring of the frame stretch the incision laterally; the side check-screw should now be firmly locked. The blades are then gently pressed into the wound by one finger, and the milled nut at the spring end of the frame turned so as to draw back the long claw; the front claws on the blades are pivoted and so shaped that they oppose the backward drag of the long claw, so that the incision is stretched tight. The field of the operation is well exposed, and the traction exerted on all sides of the wound.

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# THE OPHTHALMOSCOPE.

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## ORIGINAL COMMUNICATIONS.

## THE RELATION OF PHOTOGRAPHY TO VISION.\*

BY

F. W. EDRIDGE-GREEN, M.D., F.R.C.S.

THE eye has often been likened to a camera, but it is really a complete photographic apparatus. Light falling upon the eye is refracted by the cornea, and brought to a focus by a lens which by the power of accommodation can be adjusted for varying distances. The amount of light entering the eye is regulated by the iris, which acts as a movable diaphragm, contracting when the light is strong and dilating when it is feeble. The image of an object is brought to a focus on the sensitive layer of the retina, the layer of the rods and cones which corresponds to the sensitive plate of a camera. It is with this sensitive layer that we are chiefly concerned this evening, so I will describe it and the rods and cones in detail. The rods and cones are situated at the external part of the retina, that is, the portion of the retina farthest from the front of the eye. Light has therefore to pass through all the other layers of the retina before it reaches the rods and cones. As you will see by the picture which is thrown on the screen, the rods and cones each consist of an outer and an inner segment. The rods and cones project into a thin layer of fluid which is kept in its place by a membrane, the external limiting membrane. The most external layer of all of the retina is a layer of hexagonal cells containing black pigment; these cells throw out processes which surround the external segments of the rods when the eye is exposed to light and are retracted when the eye is in darkness. The outer segments of the rods contain a purple substance, the visual purple, which is photo-chemically sensitive to light. The outer segments of the cones are made up of a series of strongly refractile discs, which gradually diminish in circumference. The following is the theory which I hold with regard to the perception of light and colour.

A ray of light impinging on the retina liberates the visual purple from the rods and a photograph is formed.

The rods are concerned only with the formation and distribution of the visual purple, not with the conveyance of light impulses to the brain.

The decomposition of the visual purple by light chemically stimulates the ends of the cones (very probably through the electricity which is produced), and a visual impulse is set up which is conveyed through the optic nerve fibres to the brain. If it were possible, in a case in which the spectrum appeared of similar length and brightness to both, for a normal-sighted person and a colour-blind one to exchange eyes, the normal-sighted would still see colours properly and the colour-blind would still be colour-blind. There are cases in which the visual purple is differently constituted and is not sensitive to certain rays at one or both ends of the spectrum. There are other cases in which the nerve elements appear to be either more or less than normally sensitive at certain intensities and wave-lengths of light. The character of the impulse set up differs according to the wave-length of the light causing it. Therefore in the impulse itself we have the physiological basis of the sensation of light, and in the quality of the impulse the physiological basis of the sensation of colour. The impulse being conveyed along the optic nerve to the brain,

\*A Communication read before the Royal Photographic Society of Great Britain, on December 14th, 1909.

stimulates the visual centre, causing a sensation of light, and then passing on to the colour-perceiving centre, causes a sensation of colour. But though the impulses vary in character according to the wave-length of the light causing them, the colour-perceiving centre is not able to discriminate between the character of adjacent impulses, the nerve cells not being sufficiently developed for the purpose. At most, seven distinct colours are seen, whilst others see in proportion to the development of their colour-perceiving centres, only six, five, four, three, two, or one. This causes colour blindness, the person seeing only two or three colours instead of the normal six, putting colours together as alike which are seen by the normal-sighted to be different. In the degree of colour-blindness just preceding total, only the colours at the extremes of the spectrum are recognized as different, the remainder of the spectrum appearing grey.

I have already described a vertical section of the rods and cones. Let us now consider a section of the retina made horizontally through the rods and cones. In the fovea, the region of the retina, with which we see best, only cones are present. At the margin of the yellow spot one cone is found surrounded by a ring of rods, and the numerical relation of the rods to the cones increases as the periphery of the retina is reached. As will be seen from the picture thrown on the screen, each cone is surrounded by one or more rings of rods.

It will be seen, therefore, that we have a thin layer of photo-chemically sensitive fluid corresponding to the sensitive plate of the camera. The visual purple is in every respect suitable for the visual substance, and would have been accepted as such, had it not been found by Kühne that it was not present in the cones. As only cones are present in the fovea, the region of most distinct vision, it was not considered essential to vision. This difficulty is entirely obviated by the theory of the relative functions of the rods and cones which I have propounded. Actual photographs have, by means of this substance, been taken with rabbit's eyes. I have seen in the retinas of monkeys placed under the microscope, after the animals had been kept in the dark, the visual purple surrounding, but not in the cones of the fovea. Monkeys possess a yellow spot, which is similar to that of man. Many physiologists have tried to assign different functions to the rods and cones, but all these theories have failed because all the functions which were said to be the exclusive property of the rods have been found, only gradually diminished, in the fovea. For instance, Von Tschermak, Hering, Hess, Garten, and others have found the Purkinje phenomenon, the variation in optical white equations by a state of light and dark adaptation, the colourless interval for spectral lights of increasing intensity, the varying phases of the after-image in the fovea, only gradually diminished. The complete absence of any qualitative change between the foveal and extra foveal regions is a very important fact in support of the hypothesis that the visual purple is the visual substance. There may be other photo-chemical substances in the retina, but there is not the slightest evidence that such is the case. I regard the visual purple as the sole visual substance. We could, of course, split the visual purple into innumerable simpler photo-chemical substances, each of which has its own absorption curve, having its maximum in some particular part of the spectrum.

It is difficult to say at present exactly how the visual purple acts as a stimulus transformer, but this is because so many plausible hypotheses immediately occur to us. It is very probable that light acting upon the visual purple is, according to its wave length, absorbed by particular molecules, the amplitude of their vibrations being increased. These vibrations may cause



corresponding vibrations in certain discs of the outer segments of the cones, which seem especially constructed to take up vibrations. We know that when light falls on the retina, it causes an electric current. We know how the telephone is able through electricity to convey waves of sound, and something similar may be present in the eye, the apparatus being especially constructed for vibrations of small wave-length. The current of electricity set up by light may cause the sensation of light and the vibrations of the atoms or molecules the sensation of colour.

Or it may be the vibrations of the atoms which specially affect the cones, especially when their amplitude is increased and they swing out of the molecule of which they form a part. Or the process may be purely chemical, a new substance being formed in the cones when the visual purple is decomposed by light which gives rise to a nerve impulse which varies according to the decomposition products caused by the different wave-lengths of light.

In all vital processes there is a condition of katabolism or chemical change in the protoplasm and an anabolic or building-up process, in which the protoplasm is restored to its normal state. We have therefore to consider two definite processes in the visual purple, namely, a breaking down of the visual purple photo-chemically by light and its restoration by the pigment cells and rods. Under ordinary conditions of light and during the whole of the day time, the visual purple is continually being bleached and reformed. It is obvious, therefore, that when the eye has been kept in the dark and is then exposed to light, an observation taken immediately will not be comparable with one taken a few seconds afterwards, because in the first observation we have only to consider the katabolic change, whilst in the second observation, the anabolic change has to be considered as well, as the visual purple has to be reformed for subsequent seeing. There appears to be very little evidence under ordinary circumstances of this anabolic process; for instance, if we fatigue the eye with sodium light in a dark room, and then immediately examine a spectrum, we find that though all the yellow has disappeared there is no increase in the blue—in fact, the blue seems rather diminished than otherwise. Again, there is not the slightest diminution in either the red or green, showing conclusively that yellow cannot be a compound sensation made up by a combination of red and green. We must therefore explain in another way the apparent trichromatism of normal colour vision, which is so well known to every photographer, especially those who are concerned with colour photography. If my theory of the evolution of the colour sense be the correct one and we have cases of colour-blindness corresponding to every degree of the evolutionary process, we have an explanation of the facts. In past ages all saw the rainbow made up of only three colours, red, green, and violet. When a new colour appeared between the red and green (yellow) it is obvious that a mixture of red and green would give rise, not to red-green, but to the colour which had replaced it, namely, yellow. The retina, therefore, corresponds to a layer of photo-chemical liquid in which there are innumerable wires each connected with a galvanometer. When light falls upon a portion of this fluid the needle of the galvanometer, corresponding to the nearest wire, is deflected. The wires correspond to the separate fibres of the optic nerve, and the galvanometers to the visual centres of the brain.

Cases of colour-blindness may be divided into two classes, which are quite separate and distinct from each other, though both may be present in the same person. In the first class there is light as well as colour loss. In the second class the perception of light is the same as the normal sighted, but



there is a defect in the perception of colour. In the first class certain rays are either not perceived at all or very imperfectly. Both these classes are represented by analogous condition in the perception of sounds. The first class of the colour-blind is represented by those who are unable to hear very high or very low notes. The second class of the colour-blind is represented by those who possess what is commonly called a defective musical ear. Colour-blind individuals belonging to this class can be arranged in a series.

At one end of this series are the normal sighted, and at the other end the totally colour-blind. The colours appear at the points of greatest difference, and I have classified the colour-blind in accordance with the number of colours which they see in the spectrum. If the normal sighted be designated hexachromatic, those who see five colours may be called pentachromatic; those who see four, tetrachromatic; those who see three, trichromatic; those who see two, dichromatic; and the totally colour-blind, monochromatic. There are many degrees included in the dichromatic class. There may or may not be a neutral band, and this is widest in those cases approaching most nearly to total colour-blindness. I have recorded a case of a patient who was colour-blind with one eye. It is an interesting fact that for form vision the colour-blind eye was much the better of the two, and he could recognise fine lines in the spectrum with this eye which were not visible to the other. He saw the two ends of the spectrum tinged with colour and the remainder grey. It will be noticed that his colour sensations were limited to the extreme red and the extreme violet, namely, those colours which present the greatest physical contrast to each other. Neither the red nor the violet appeared of the nature of a primary colour, but gave the impression that they were largely diluted with grey. A theory of colour vision must account for a case of this kind and also for the other varieties and degrees of colour-blindness. The trichromatic are a very important class, and any theory must account for the fact that they see yellow as red-green, and blue as violet-green. As we should theoretically expect, when there is shortening of the spectrum the centres of the colours are moved towards the unshortened side.

I will now show on the screen, some representations of pictures painted by colour-blind persons.

The upper picture is the copy, and the one below is the one which has been painted by the colour-blind artist. He has been given a selection of colours on plates and from them has selected the one which he thought appropriate in each case. It will be noticed that the mistakes made are characteristic of the colour perception of the person painting them. Whenever I show these pictures I am asked why it is that these characteristic mistakes should be made, and that the true colour of the object is not used instead. This undoubtedly would be the case if the artist were allowed directly to match the colours by directly comparing them. But he is not able to do this, he looks at the copy and decides what colour an object is, and then looks for the colour with which to paint it.

A man rarely uses a hue which he does not see as a definite colour, and therefore it has been quite possible for me to pick out those who are more or less colour-blind in the exhibitors of the picture gallery. For instance, if a trichromatic had to paint a yellow object he would decide after looking at it, whether it be a red or green in his estimation and represent it accordingly. He will be greatly influenced by the nature of colours in its immediate proximity, because simultaneous contrast is increased in the colour-blind. Thus, he will certainly represent a yellow which is adjacent to a red as green, and a yellow which is adjacent to a green as red.

### Evolution of the Colour Sense.

We must assume that the visual centre was developed first, and that at one time in past ages all objects appeared without colour, as in a photograph. When the colour-perceiving centre was first developed, the rays differing most in wave-length were the first to be distinguished, and so the spectrum appeared nearly all grey, or neutral, but with a tinge of red at one end and a tinge of violet at the other. As more and more cells were added to the centre it was not necessary that the rays should differ so much in refrangibility before a difference was seen, and so the red and violet gradually invaded the grey or neutral band, until at a certain point they met in the centre of the spectrum. Such cases are called dichromics. The next stage of evolution of the colour-sense is when the colour-perceiving centre is sufficiently developed to distinguish three main colours in the spectrum. The third colour, green, appears in the centre of the spectrum, that is, at the third point of the greatest physiological difference of refrangibility of the rays. In accordance with the prediction of the theory, I found a considerable number of persons who saw the spectrum in this way, about 1·5 per cent. of men. The trichromic see three main colours in the spectrum—red, green, and violet. They usually describe the spectrum as consisting of red, red-green, green, green-violet, and violet. They do not see yellow and blue as distinct colours, and are therefore in continual difficulty over them. There are very few of the tests in general use which can detect them, especially if names be not used. They will usually pass a matching test with ease. An examination with the spectrum shows that their colour-perception is less than the normal in every part, though the curve has the same general shape. The three trichromics described in my recent paper on "Observations on Hue Perception" each saw ten consecutive monochromatic patches in the spectrum instead of the eighteen or nineteen seen by those who see six colours in the spectrum. It is easy to show that the trichromic are dangerously colour-blind. They will mark out with my colour perception spectrometer a patch containing greenish-yellow, yellow, and orange-yellow, and declare that it is absolutely monochromatic. When tested with coloured lights they find great difficulty with yellow and blue. Yellow is continually called red or green.

There are several other degrees of colour perception, and it may be well to say a word or two about them, though I class all above the trichromic with the normal-sighted for practical purposes, as they are not dangerously colour-blind, and can always distinguish signal lights correctly. In the next stage of evolution four colours are seen in the spectrum, and the fourth colour appears at the fourth point of greatest difference of refrangibility, namely, at the orange-yellow of the hexachromic or six-unit people. These persons I have designated "tetrachromic" because they see four distinct colours in the spectrum, that is, red, yellow, green, and violet. They do not see blue as a definite colour, and are continually classing blues with greens; they usually prefer to call blue purplish-green. In the next stage in evolution there appeared those who see five colours in the spectrum—red, yellow, green, blue, and violet, blue being now recognised as a definite colour. These are the pentachromic group. These people pass all the tests in general use with ease. They, however, have a definitely diminished colour perception compared with the normal or those who see six colours in the spectrum. They mark out in the spectrum only fifteen monochromatic patches instead of eighteen. They cannot see orange as a definite colour; for instance, they can never tell whether a strontium light, which is red, or a calcium light, which is orange, is being shown them.

In the next stage of evolution orange is recognised as a definite colour, and thus we get the hexachromic or normal group, and, as we should theoretically expect, the yellow of the pentachromic is now split up into two colours—orange and yellow. The last stage of evolution which we appear to have reached are those who see seven colours in the spectrum, and the additional one is called indigo. These constitute the heptachromic group, and this seventh colour appears at the exact point which it should appear, according to my theory, namely, between the blue and the violet. Persons belonging to this class have a marvellous colour perception and memory for colours. They will indicate a certain shade of colour in the spectrum, and then next day will be able to put the pointer at precisely the same point, a feat which is quite impossible to the ordinary normal-sighted person. They see a greater number of monochromatic patches in the spectrum than the hexachromic, but the curve has the same form. The marking out of the heptachromic does not appear correct to those who see six colours; for instance, the blue appears to invade the green, and the indigo does not appear a definite colour at all. If, however, we bisect the blue of the seven-colour man, and then bisect his indigo, on joining the centres we get the blue of the six-colour man, showing most definitely that the blue has been split up into two fresh colours. It will be noticed that there is room for much further evolution, and we could go on splitting up the spectrum indefinitely if only we had the power to distinguish these finer differences, but, as a matter of fact, I have never met with a man who could see more than twenty-nine monochromatic patches in the spectrum, and there are really millions, though by monochromatic patches I do not mean twenty-nine separate colours.

There may be some relation between the monochromatic patches and the discs in the outer segments of the cones. These are about sixteen in number in the guinea-pig. As in photography, the intensity of light is a very important factor in vision. With colours of moderate intensity the periphery of the retina is found to be colour-blind, but this apparent colour-blindness disappears when more intense lights are used. A person may have shortening of the spectrum with light of moderate intensity, but when the light is increased be able to recognise the spectrum to its normal limit. The change in steepness of gradation, according to the intensity of the light, is well known to photographers. The Purkinje effect, a change in maximum sensitiveness of the eye according to the intensity of the light, is in my opinion a photo-chemical effect. I find that the Purkinje effect is found for small portions of the retina if a black object has been situated in the corresponding part of the field of vision.

I will conclude by giving an explanation of the function of the yellow pigment, which is found in the yellow spot, and here again we have an explanation which is closely related to photography. I consider that the yellow pigment acts like the yellow screen in photography, which, by absorbing the blue and violet rays of the atmosphere, renders visible that which would otherwise be invisible. This is further borne out by the fact that hunters in India are able to hunt later in the day than usual by using spectacles glazed with golden-yellow glass.

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**A CASE OF SYMPATHETIC IRRITATION FOLLOWED BY  
NEURITIS A YEAR AFTER ENUCLEATION; TOGETHER  
WITH SOME OBSERVATIONS ON ENLARGEMENT OF THE  
BLIND SPOT.**

BY

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AND

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OPHTHALMIC SURGEON TO THE DISPENSARY  
OF THE ROYAL HOSPITAL FOR SICK CHILDREN,  
GLASGOW.

A.B. *æt.* 16 years, female, was admitted to the Ophthalmic Institution, Glasgow, on the 7th of January, 1908. Previous to this she had been attending as an out-patient for a year. When she came first as an out-patient, there was some slight irritation of her right eye. Dr. Sutherland made observations for me of the blind spot, and has been kind enough to write out his notes, which are embodied in this paper. Condition on admission as an in-patient to the Hospital.—There was an old wound of the left eye with sympathetic irritation of the right. The history given was that eight years ago the patient was hit in the left eye with a stone. Two years ago iridectomy was performed on this eye, and since then she has been troubled with headaches, and occasionally with pain in the left eye. There was injection of long ciliary vessels, more marked in left eye, and a linear scar in left cornea rather to the outer side, running from above downwards and outwards. The iris was adherent, and there was coloboma of iris at each pillar. No tenderness on pressure. Right vision = 6/6 and J.I., and left vision = fingers at 1 metre. Ophthalmoscopic examination showed disc pinkish; arteries and veins full. This condition had been present for at least a year. Blind spot was spindle-shaped.

8th January, 1908.—Enucleation.

13th January, 1908.—Dismissed. Blind spot still spindle-shaped.

Dr. Mary Hannay made an examination of the left eye after enucleation, and reported as follows:—

“Linear scar on left cornea rather to outer side running from above down and out; iris adherent; coloboma of iris at lower inner side; small prolapse of iris at each pillar. Externals of globe as above noted (coloboma of iris with slight prolapse at the pillars; corneal scar.) On bisection, there is some distension of the globe, and distinct stretching in the ciliary region; the lens is atrophied, and opposite the pupil its anterior surface is irregularly opaque; from this opacity two bands pass forward through the pupil to the cornea, one of these being attached to the corneal scar, and to it the pupillary margin of the iris is apparently adherent. There is some swelling of the papilla, but no choroidal exudate. Microscopic examination.—Sections have been made of the front of the eye through the iridectomy. The cut end of the ciliary body is adherent to the posterior surface of the cornea. There is adhesion of the iris to the cornea at the corneal scar. The ciliary body was stretched. The back of the eye is normal.”

After dismissal, the condition of the right eye gradually quieted down, and everything went on satisfactorily until the 9th January, 1909, *i.e.*, a year later, when she went to a cinematograph show, and on the 10th of January



—namely, the day following—she felt her right eye stiff and somewhat painful when she moved it, and her sight was “misty.” She had not been straining her eye. She consulted me on the 18th of January with the above symptoms, and right vision then equalled 6/18 and Jaeger 12. Ophthalmoscopic examination showed well-marked neuritis; the edges of the optic disc were blurred, and only on the temporal side, at one place, could the edge of the optic disc be seen. The field was normal. Patient stated she had been to cinematograph shows before the present one, and her eye had not suffered. Her general health at that time was good. Urine, etc., normal.

On the 29th of January the swelling of optic disc appeared less. On the 8th February she stated that her vision was much better, and then R.V. = 6/6 and Jaeger 1. Ophthalmoscopic examination showed optic disc clear on temporal side, and only slightly hazy on nasal side. Veins were still full, especially the one passing downwards. On the 17th of February the condition was slightly improved, in spite of the fact that she was menstruating. This evidently had no effect on the neuritis. On the 10th March, R.V. = 6/6 and Jaeger 1. The fundus was practically normal, and the neuritis had passed off, though the veins were still somewhat full. On the 28th of April the fundus was practically normal, though she said her sight was somewhat dim.

On the 24th of June the report was as follows.—R.V. = 6/6 and J. 1. She had no trouble with her eye. Ophthalmoscopic examination showed fundus normal; veins somewhat full; field normal.

Dr. A. W. M. Sutherland was kind enough to give the following note.—I saw the patient for the first time on the 5th of June, 1907, about eight years after the left eye had been damaged. The vision of the injured eye was fingers at 1 metre; the cornea showed a linear scar with prolapse of iris, etc. There was no tenderness to pressure, nor was there any external redness of either eye. The right vision was 6/6, but the optic disc was of an angry red colour and the vessels, especially the veins, were swollen and congested. On mapping out the shape of the blind spot, I found a slight downward enlargement, but at this time the enlargement did not assume the spindle shape, described in January, 1906, in the *Ophthalmic Review*. In view, however, of the appearance of the disc, I gave the opinion that the sound eye was in an anxious condition, and that the blind spot would probably assume the spindle shape at a later date. Six months later, the patient returned complaining of acute pain in the damaged eye, which was very red, and tender to the touch. The right eye had a zone of ciliary injection, the vision was still 6/6, but the optic disc was very red, the vessels were swollen and tortuous, and along one artery were white lines. The blind spot was markedly spindle-shaped. Enucleation was performed a few days later, but the blind spot did not recover its normal shape for three months, by which time the appearance of the disc had become normal.

About a year later the patient returned; there was marked optic neuritis in the right eye. Vision was 6/18. The blind spot was again spindle-shaped. As the neuritis subsided, the blind spot improved in shape, and was normal in about four months' time. The presence of the spindle-shaped enlargement of the blind spot was in the first instance associated with what was undoubtedly the beginning of an attack of sympathetic disease, in the second it accompanied an attack of neuritis. In each case it passed off with the inflammatory condition of the disc.

This case seems to us worthy of being put on record, as the observations of the blind spot were made regularly and continuously for several months, while the case was carefully observed with the ophthalmoscope; and also for the fact of the attack of neuritis which followed a year after the enucleation.



This latter showed that though everything appeared to have become absolutely normal, there was still a condition of irritability liable to pass on to marked neuritis when the eye was exposed to an irritation which in a healthy eye would have had no deleterious effect.

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## A CASE OF POST-DIPHTHERIAL PARESIS OF ACCOMMODATION, WITH AN UNUSUAL PUPILLARY SYMPTOM.

BY

SYDNEY STEPHENSON,

LONDON, ENGLAND.

IN a recent number of *The Clinical Journal* (October 13th, 1909) Dr. H. H. Tooth, physician to St. Bartholomew's Hospital, London, described a case of somewhat severe post-diphtherial paralysis in an adult male patient. About a month after an attack of faucial diphtheria, which was treated with anti-toxin, the patient experienced a difficulty in pronouncing labials, his voice was of nasal quality, and he had some trouble when he attempted to swallow fluids. Weakness of the legs was accompanied by diminished knee-jerks. At a somewhat later stage, other symptoms were numbness of hands, fingers, and soles of feet, ataxic and unsteady gait, loss of sense of position, tremor, nervousness, and absent knee-jerks and plantar response. The eye symptoms were most interesting. They included weakness of the left orbicularis palpebrarum, paresis of the ciliary muscles, and *response of the pupils to light but not to accommodation, i.e., accommodative iridoplegia.*

Commenting upon the pupillary symptoms presented by the patient, Dr. Tooth remarked that associated with paralysis of the ciliary muscle, there might be "an absence of the usual synchronous action of the pupil."

The symptom, accommodative iridoplegia, thus spoken of by Dr. Tooth as though it were a recognized accompaniment of some cases of post-diphtherial paresis, was new to me. I had never met with such a case. I am tolerably certain that the "near-vision reflex," as contraction of the pupil in association with convergence and accommodation has been called by Dr. Arthur J. Ballantyne (*THE OPHTHALMOSCOPE*, July, 1909), was present in those cases of post-diphtherial paresis of accommodation (not a few in number) that I have had an opportunity of examining.

By a somewhat curious coincidence, a few days (October 19th, 1909) after I had read Dr. Tooth's lecture, a boy, nine years of age, was brought to me at the Evelina Hospital, London, suffering from loss of the near-vision reflex after diphtheria. The history of the case was to the effect that about five weeks ago (September 9th) the lad became very ill with "an ulcerated throat." His neck was extremely tender, and the glands in that part were swollen. The lad was delirious, and his temperature is known to have reached 104° F. on at least one occasion. The bacteriological examination of a "swab" taken from his throat by a medical practitioner (Dr. H. G. Cowie, of Camberwell Green, S.E.) gave a negative result as regards the Klebs-Löffler bacilli, and on that account antitoxic serum was not injected. The patient spent three weeks in the house, most of the time in bed. When he went to school at the end of that time (October 4th), the teacher found that he was quite unable to read anything except large print, although prior to his illness, he was in the IIIrd school standard, and could read well,

**On Admission.**—The child was pale and rather "nervous." He spoke with a pronounced nasal intonation, and, according to his mother's statement, fluids tended to run through his nose. There was no incoordination. The knee-jerks were almost completely absent, it being a matter of very considerable difficulty to elicit the least response to repeated taps upon the tendon. The palatal reflex could be evoked readily enough. Heart normal. Urine, sp. gr. 1020, no albumin. No ptosis, squint, or diplopia. Ocular movements, including convergence, good. In the dull light of an October afternoon in London, the transverse diameter of each pupil was 3.5 mm. The pupils reacted well and promptly to light, but, despite repeated and careful examination by myself and others, no near-vision reflex could be made out. R.V. 6/60 and No. 14 Jaeger. L.V. 6/36 and No. 14 Jaeger. Estimated hyperopia, 4 D. No. 1 Jaeger could be read at 20 cm., when a *plus* 7 D. spherical glass was placed in front of each eye. A. = 6 D. Fundi normal.

**Treatment.**—The treatment adopted was rest in bed, prohibition of any attempts to read, and the administration, twice a day, of a mixture each dose of which contained solution of hydrochloride of strychnine,  $\frac{1}{2}$  minim; diluted phosphoric acid, 5 minims; compound tincture of gentian, 10 minims; and caraway water to one drachm.

**Progress.**—On October 29th the lad was better, but there was still regurgitation of liquids and nasal phonation. It was easier to elicit the knee-jerks. The pupils, 3.5 mm. in diameter, and active to light, were now slightly responsive to convergence and accommodation. Movements of eyes were good, and the lad could converge to the tip of his nose. R.V. 6/36 *plus* 4 D. sph. 6/9. L.V. 6/18 (3) *plus* 4 D. sph. 6/9. No. 8 Jaeger could be read with each eye. With *plus* 3 D. sph. No. 1 Jaeger was read at 10 cm. = p.p. 10 D. — 3 D. = 7 D. A. 7 D. *plus* 4 D. = 11 D. That is to say, the paresis of accommodation amounted to about 4 D. *November 2nd.*—R.V. 6/18 : L.V. 6/12 ptly. With *plus* 4 D. spherical read No. 4 Jaeger. A dose of the medicine to be given three times a day. *November 9th.*—The lad is stated by his mother to be much better, since she found he could read fluently some rather small printed matter when she made the experiment this morning. R.V. 6/9 ptly. and No. 1 Jaeger. L.V. 6/6 ptly. and No. 1 Jaeger. The pupils, active to light, as they have been all along, now react well with convergence, an observation confirmed by several who saw the case. No incoordination or unsteadiness. No regurgitation of fluids from nose. Voice still a little nasal in character. Knee-jerks can be elicited, although not without difficulty. Ocular movements—in particular, convergence—good. Lad said to tire easily. Four doses of the medicine to be given daily.

**Result.**—The patient was seen for the last time by me on November 30th, that is to say, forty-two days after he first came under my notice. His colour was good, and his appetite was stated to be excellent. The nasal intonation had completely disappeared. The knee-jerks were still somewhat minus. R.V. 6.5 ptly. L.V. 6/6. No. 1 Jaeger could be read at 10 cm., *i.e.*, A. = 14 D., which is about normal for a boy of the patient's age.

**Remarks.**—That post-diphtherial paralysis of the near-vision reflex is a rare complication appears to follow from the fact that it is not even mentioned in such comprehensive works as Knies' *Relations of Diseases of the Eye to General Diseases* (New York, 1895) or Bach's *Pupillenlehre, Anatomie, Physiologie und Pathologie* (Berlin, 1908). Indeed, the only case I can find, in addition to the one described by Dr. Tooth, is by W. Lohmann, of Munich, mentioned in the 35th Volume of the *Transactions of the Heidelberg Ophthalmological Society*, 1909, p. 264. It occurred in a girl, aged 8 years. About three weeks after diphtheria, the child developed difficulty in swallowing,

and became unable to read. There was paralysis of accommodation, associated with entire loss of the near-vision reflex, together with retention of the light-reflex and the power of convergence. The pupils, when examined in the dark room, showed pronounced unsteadiness.

Dr. Arthur J. Balianyine informs me that he has seen loss of the near-vision reflex in association with paralysis of convergence after diphtheria, but that is obviously a somewhat different thing from the condition described in the present communication.

Finally, it is possible that careful and systematic examination of the reactions of the pupil in cases of post-diphtherial paralysis may show that the rarity of accommodative iridoplegia is more apparent than real.

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## A CASE OF RETROBULBAR NEURITIS FOLLOWED BY DORSAL MYELITIS.

BY

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LONDON, ENGLAND.

A. H., æt. 39 years, consulted me on September, 5th, 1908, for rapid failure of sight in both eyes. His vision was: right eye, fingers counted at 2 metres. Left eye: no perception of light.

The history of loss of sight was as follows:

Early in March, 1908, he was troubled with photophobia; about the middle of June, 1908, the vision of the right eye rapidly deteriorated for three days and then suddenly failed in one night and so completely that for some weeks he had no perception of light; subsequently there was a gradual but slight improvement in the vision. The vision of the left eye rapidly failed for five days and he became suddenly blind in the eye on September 1st, 1908.

*Past History.*—Syphilis was contracted eighteen years ago; he was treated on the Continent for four months with pills; he has had no subsequent treatment.

Alcoholic and sexual excesses have been indulged in since at frequent intervals. He married five years ago and has one healthy child; his wife has had no miscarriages or still-born children. In the autumn of 1907, he was attacked by a most severe form of neuralgia of the head and face causing insomnia, loss of flesh, and the necessity of recourse to morphia injections by his medical attendant. No treatment has afforded him any material relief, and he still suffers great pain: during the past six months his hair has become grey.

*Present condition.*—He looks ill and somewhat emaciated; he weighs 10 stones; his height is 5 feet 9 inches.

*Right eye.* The iris reacts to light and accommodation. The disc is pale and presents the usual appearance of a simple atrophy.

*Left eye.* The iris is more widely dilated than the right and is immobile to light and accommodation. The fundus presents a fairly normal appearance, excepting for blurring of the disc at its upper part. There is some hyperæsthesia to light and tenderness of both eyes under pressure. The knee jerks are brisk; plantar reflex normal. No Romberg symptom.

Urine 1020. No albumen or sugar present. Transillumination of the nasal sinuses and examination of the naso-pharynx showed no evidence of any latent trouble resulting from a past sinusitis. He was admitted to a home, and daily inunctions of ung. hydrarg. fort. were ordered. After the first week strychnine was administered in increasing doses by the mouth. On October 6th he left the home with no alteration in his condition. The inunctions were continued, and potassium iodide gr.x t. d., replaced the strychnine.

Whilst in the home he suffered from symptoms of lumbar meningitis; at first the pain was intense in the right lumbar region, and extended forwards to the right iliac and hypogastric regions; this was associated with anæsthesia of the outer side of the left thigh and leg.

October 13th, 1909.—Vision: right eye—fingers at 3 metres; left eye(?) perception of light. Pains in head and face quite gone.

October 18th, 1909.—Acute retention of urine and loss of control over the anal sphincter were rapidly followed (in twelve hours) by complete paralysis and anæsthesia of the right leg. Six days later the left leg became paralysed.

He was admitted to University College Hospital under Dr. Risien Russell, who has kindly allowed me to make use of the following brief abstract of the patient's condition whilst under his care:—

Admitted on October 20th, 1908.—There was spasticity of the right leg and flaccidity of the left leg; anæsthesia as high as the fifth intercostal space, with a well-marked zone of hyperæsthesia. Retention of urine and incontinence of faeces present. Cystitis developed, and during the subsequent three weeks he had three rigors. Incontinence of urine developed later, and the bladder was washed out daily. Patient left the Hospital on January 9th, 1909, with no anæsthesia, a spastic paraplegia, and incontinence of urine. The optic atrophy showed no change on repeated examinations. The left eye did not react to light.

*Diagnosis.*—Tabes dorsalis; specific myelitis. During the last three months there has been a slight improvement; he can now, with the aid of a stick, walk about his rooms, and he has control of the bladder.

*Vision.*—Right eye—fingers counted at 4 metres; left eye, perception of light. The pupils are equal, both irides react to light and accommodation, but the left more sluggishly than the right.

*Remarks.*—These cases are uncommon, but form a well-recognised group, as some fifty cases have been published.\* Parsons has collected them and discussed their pathology.

The primary cause in this case must be attributed to syphilis, but the exact nature of the lesions and the mode of their production is not so clear. The retro-bulbar neuritis, probably an interstitial inflammatory condition caused by toxines, produced some swelling of the nerve which, meeting with bone resistance at the optic canal, caused rapid increase of pressure on the nerve fibres and complete loss of function, followed later by parenchymatous degeneration. The rapid deterioration of sight followed by sudden failure would thus be accounted for. Periostitis around the optic canals and endarteritis of small nutrient vessels of the nerve are possible explanations.

Nettleship† has stated that, in his experience, 50 per cent. of symptomatic retrobulbar neuritis cases—in contradistinction to idiopathic—are due to syphilis. Probably since 1899 experience has shown that a larger percentage

\* Parsons, Herbert.—*The Pathology of the Eye*, Vol. IV.

† Royal London Ophthalmic Hospital Reports, XV.



are caused by syphilis, and in the future I have no doubt that many so-called idiopathic cases will, with the aid of serum diagnosis and improved methods, come under this heading.

The causation of the myelitis was probably the sudden loss of blood supply through a syphilitic endarteritis obliterans, rather than an acute softening due to direct toxic poisoning. The preceding spinal meningeal pains no doubt indicated the morbid processes going on which resulted in myelitis. The other point of interest in this case was the return of iridic contraction to light and accommodation.

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## CLINICAL MEMORANDA.

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### A CASE OF NON-PIGMENTED NÆVUS OF THE CONJUNCTIVA.

C. GORDON MACLEOD,

M.A., M.B., CH.M. (EDIN.)

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BY

AND

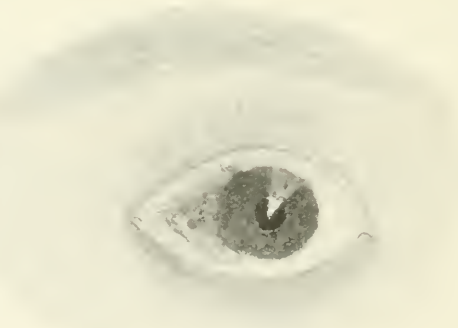
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M.B., B.S. (MELB.)

LATE ACTING ASSISTANT OPHTHALMIC SURGEON,  
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IN view of the rarity of recorded cases of non-pigmented nævi of the conjunctiva (18 cases only having been so far reported), the following additional case, which strongly resembles one by Rönne, of Copenhagen (*see* THE OPHTHALMOSCOPE, 1909, p. 427), should be of interest.

G——C———was at first brought under observation when three years old. The mother gave a history to the effect that a small yellowish speck



Nævus of the conjunctiva (right) Gladys C———æet. 13  $\frac{1}{2}$

was noticed on the white of the eye shortly after birth, and that it had grown gradually to the present dimensions. Some months before the patient's birth, the father had had an advancement of the right external rectus done for convergent strabismus, and the mother was confident that the condition of her daughter's eye was the result of a maternal impression.

No history of port-wine stains or other obvious evidence of nævoid growths on father or mother's side.



The growth was irregularly oval in shape, with a long diameter of 5 or 6 mm., reddish-yellow in colour, slightly raised above the surface, and situated over the insertion of the right external rectus. It was separated from the limbus by 4 or 5 mm. of normal conjunctiva.

The case was under observation for some months, during which it remained without change. The mother was averse to interference at that time and the case was lost sight of until last year (the patient being then over 13 years of age), when a very marked change was apparent. The growth now extended to the limbus encircling the cornea, for one-third of its extent, and was of the dimensions of the accompanying sketch by Dr. D'Ombrian. Its bulk could be reduced partially by pressure, and it was to a limited extent movable with the conjunctiva.

The conjunctiva was incised above and below, wide of the growth, and the latter dissected up from without inwards. It was closely adherent to the episcleral tissue, from which it did not separate easily. The surrounding conjunctiva was freed and brought together with stitches, and recovery was uninterrupted. After the lapse of a year, there has been no recurrence.

Microscopical examination showed the structure to be typically naevoid, naevus cells in alveolar and diffuse arrangement being present.

The case is of additional interest from the fact of its development being noted from its early beginnings.

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## A CURIOUS CASE OF NYSTAGMUS.\*

BY

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For the last two years, only on closing lids, the eyes of a lady, aged 20 years, have made lateral nystagmic movements, 85 to 100 double motions a minute. This stops during sleep, and for about a minute she can hold the eyes still by an effort, during which the upper lids constantly quiver. On looking up, with the eyes open, there is some tendency to a similar movement, but it is not constant. Refraction is about 1 D. cyl. axis oblique  $= \frac{6}{5}$ . Latent divergence of 3°.

The patient has always been rather nervous and "jumpy"; has floating kidney; suffers at menstrual periods; rheumatic joints.

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## REVIEWS.

### I.—THE DETERMINATION OF VISUAL ACUITY.

BY

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AT the International Congress of Ophthalmology, held at Lucerne in 1904, a Committee was appointed to formulate a uniform method of determining and recording visual acuity. As already recorded in THE OPHTHALMOSCOPE,

\* Case reported to Ophthalmological Section of the Southern American Medical Association, November, 1909.

the recommendations of this Committee were adopted almost unanimously by the International Congress of Ophthalmology at Naples in 1909, and it is therefore, of interest to consider how their proposed methods differ from those in general use in this country and what advantage or disadvantage is likely to result from their general adoption. The Report consisted of two parts, the first of which dealt with the determination of visual acuity, and the second with the unification of notation of the meridians of astigmatism. As the latter part has already been dealt with in THE OPHTHALMOSCOPE of October, 1909, the remarks in this Review will be confined to the former.

Taking first the proposals of the Committee which do not involve any alteration in the methods at present usual in this country :

1.—The determination of visual acuity must be based on the measurement of the "minimum separabile," or the smallest separation at which two simultaneous impressions give rise to two independent sensations, and not on the "minimum visible," or smallest object which gives rise to a definite sensation. This is the principle on which Snellen's optotypes and their various modifications are founded, and on both practical and theoretical grounds it would be a pity to abandon it.

2.—The unit of measure for visual acuity should be an angle of one minute. This is the unit which was adopted by Snellen, and experience has shown that the standard established with it as a basis is a reliable one, although many eyes have more than full normal vision according to it. Consideration of the confusion which would arise between the records of the past and those of the future, in case it were altered, makes one devoutly thankful that no such change is suggested.

3.—The illumination of the test-types should be by diffused daylight coming from opposite to the type and not laterally. There is, no doubt, much variation in practice in this respect, but considering the impossibility of always obtaining daylight and the variations in its illuminating power which may occur within short intervals of time, even at midday, in places not exposed to the terror of London fogs, it would seem as if a standard artificial illumination would have been preferable, especially considering that, as will be shown later, the Committee recommend an inconvenient form of test-object with a view to obtaining uniformly comparable results.

4.—The degree of visual acuity is regarded as proportional to the smallest angle under which (or the greatest distance at which) the test-object is distinguished. Here, again, Snellen's principle is rightly adopted rather than the suggestion of Vierordt, that it should be regarded as inversely proportional to the tangent square of the smallest perceptible visual angle.

The particulars in which alterations in the method of ascertaining visual acuity commonly in use in this country are proposed, are the following :—

1.—Letters are to be abolished as test-objects and replaced by Landolt's broken rings (*i.e.*, black rings of varying size on a white ground with a thickness equal to one-fifth of the diameter of the ring, and a break equal to their thickness). Landolt claims for his broken rings that (1) they fulfil perfectly the principle of the minimum separabile; (2) in all their positions they have the same signification for everyone; (3) the ease with which they are recognised does not depend on the degree of education of the person examined; (4) the questions and answers required in testing with them are exceedingly simple; and (5) the position of the breaks can be altered, and the accuracy of the patient's answers checked by changing the position of the board. The Committee, however, considers that visual tests should serve first of all to determine the conditions (*e.g.*, glasses, etc.) which give the clearest images of the surrounding world, and only secondarily to express in

figures the faculty possessed by the eye of seeing such forms, and that in many cases the best sight can be more easily ascertained by using letters and figures as test-objects than with the broken ring. It therefore drew up a second test-board on which the rings were replaced by the Arabic figures 1, 4, 7, 0 which, when of suitable size and thickness, have been found by Professor Hess to be distinguishable at the same distance as the corresponding broken rings. It is, of course, undeniable that some letters are more easily distinguished than others, and that some few analphabets know their figures, but the small number of figures used (4 only as compared with at least 8 positions of the break in Landolt's ring) is a disadvantage, while practical experience has shown that accurate results can be obtained by testing with a sufficient number of letters. Whatever may be the advantages of Landolt's ring, there are obvious objections to its adoption in ordinary routine testing for glasses (*e.g.*, the difficulty of knowing which ring the person tested is looking at unless there is someone pointing to it), and there are also great objections to the adoption of one test for visual acuity and another for choice of glasses, while the advantages of the figures chosen by the Committee over the letters in common use do not seem to be sufficient to justify the abandonment of the latter.

2.—The figures are arranged in pairs on the test-board prepared by the Committee, while only a single vertical row of broken rings is given, thus departing from practice of having fewer of the larger letters because accuracy of testing is more important in the higher grades of vision than in the lower.

3.—It is proposed to substitute a decimal scale for Snellen's graduation, the lines to correspond to vision of 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.5, and 2. The chief argument in favour of this arrangement is that it enables the visual acuity to be recorded in decimal fractions, and so brings its measurements into line with the decimal metric system. The disadvantages, however, attendant on it are great. It necessitates a uniform testing distance, and although the values can be worked out for other distances, it would be misleading to record such values as simple decimals without adding a note of the distances at which the testing was made, while the fact that they had been corrected for such a distance would also have to be stated. Compared with this, the simplicity of Snellen's unreduced vulgar fractions and the accuracy of the information given by them as to the distance at which the test was made, and the size of the test objects recognised, is very marked. Further, the recording of a decimal fraction or a reduced fraction of vision, the working value of which is not correctly represented by such a fraction, is, from a medico-legal point of view, objectionable, and the very fact that the fractions by which the vision is represented according to Snellen's method are unreduced, is an indication that their meaning is not purely mathematical.

4.—The standard distance for testing vision is fixed at 5 metres. There is much to be said in favour of testing at this distance, but the necessity for forcing it on every one would not arise were it not for the attempt to represent as decimal fractions values which essentially are not fractions at all.

To sum up, the Committee has adopted the fundamental principles and standards on which the measurement of visual acuity has been based for over forty years, but it has proposed certain variations in the *technique* by which these principles are applied. These affect the test objects and their arrangement on the test-boards, and are retrograde, inasmuch as they tend to introduce a distinction between the test for visual acuity and the test by which the best glasses are ascertained, and they neglect the principle that the testing should be more careful in the higher grades of vision than in the lower. The most serious objection, however, to the proposals of the Committee is that

they abandon the eminently scientific and flexible system of recording vision by means of a pseudo-fraction in favour of the decimal system and establish a fractional system which, while mathematically correct, is absolutely unreliable as a measure of the working value of the vision present in any given plan, and therefore liable to be most misleading, especially in Courts of Law.

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## II.—DETACHMENT OF THE RETINA REVIEWED.

BY

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### PART II.

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#### SOME DIAGNOSTIC POINTS.

AT the first glance it might almost seem superfluous to discuss the diagnosis of retinal detachment, because the actual recognition of a retina out of place is usually easy and is within the regions of the commonplace. I have no intention, however, to discuss the usual ophthalmoscopic appearances, the tension, the use of the diaphanoscope, the fields of vision, and so on, except as these may bear upon cases which are more or less exceptional.

A little consideration will show that there may be placed under the heading diagnosis several matters of very great importance, namely, the diagnosis of intra-ocular tumour, the medico-legal aspects of detachment associated with, whether or not caused by, traumatism; and prospective diagnosis, that is the diagnosis in advance of a coming detachment.

#### Peculiar Cases.

Before taking up the above-mentioned three main points it may be well to remind ourselves that all cases of simple detachment are not alike in their ophthalmoscopic appearances or symptoms. Sometimes a largely detached retina retains a great deal of its transparency, and does not become of the typical blue-grey appearance. For example, I have at the present time under treatment an elderly woman with fairly high myopia who has twice at least had detachment, apparently of the retina only, and in whom the retina has never become blue-grey. Twice this retina has re-attached, and on the last occasion remained so for over a year.

The choroid and retina may become detached together, though I imagine this condition is one of which we know very little as a clinical manifestation. At any rate, if the choroidal vessels are invisible owing to the presence of an intervening layer of fluid the diagnosis is probably impossible. The following quotations from the literature will serve to illustrate my point, that while in the ordinary way the diagnosis of a retina out of place is easy, we must be prepared for a certain number of exceptions to the usual rules as to the appearances and symptoms.

Nettleship<sup>6</sup> had a case, in a lad of 17 years, in which there was a universal detachment varying from 8 to 13 dioptries. The retina had remained transparent, and there was good light perception and good projection except



above. Without a glass he could not count fingers, but with from +8D. to +18D. he counted fingers at a foot, and read letters of J20. The eye had been divergent for 8 years, since the patient received a blow on the head.

McKeown<sup>7</sup> saw an extensively detached retina in a man of 70, where the sensitiveness of the retina was not entirely destroyed.

Hartridge<sup>8</sup> has said that too much reliance should not be placed on the field of vision. The field may be full or nearly so, and yet there may be a detachment.

Spicer<sup>9</sup> has reported the case of a myope of 8 D. in whom the visual acuity was  $\frac{6}{60}$ , with a field which was practically full in spite of complete temporal detachment of retina and choroid.

D'Oench<sup>10</sup> observed white spots all over a detached retina in a man of 45. The spots were of the ophthalmoscopic size of the head of a pin, and gave the retina the appearance of an astronomical chart. Neither sugar nor albumin in the urine. D'Oench refers to similar cases mentioned by Leber.

### Detachment in association with Intraocular Tumour.

That detachment of the retina may occur in association with intraocular tumour, apart altogether from that portion of the retina which is actually lifted up by the tumour, is not actually a new idea, but it is due to Parsons that it has become distinctly recognised that a detachment which has all the appearance of being "simple" may in reality be symptomatic of an intraocular growth. So little, indeed, had hitherto been thought of such a possibility, that even the third American edition of Fuchs' *Text-Book* makes no mention of any detachment other than that covering the tumour.

Mengin<sup>1</sup>, in 1886, saw a partial detachment of the retina in a case of melanosis of the choroid. It looked simple, yet time proved that it was not so. This author remarks that it may happen that a neoplasm, of small volume for years, may cause a relatively considerable retinal exudation, and that the mobility of the detached retina may be quite as manifest in a case of small stationary tumour which has caused considerable exudation as in a simple detachment.

In the same year Dehenné<sup>2</sup> emphasised the importance of bearing in mind that what looks like a simple detachment, especially in a non-myopic eye, and when there has been no trauma, may really be due to choroidal tumour.

Silcock<sup>3</sup>, ten years later, had a case of posterior retinal detachment of obscure origin, in which, in order to ascertain whether or not there was a tumour, he tore the retina with an ophthalmoscopically controlled needle. A red reflex appeared, but no blood, and it was concluded that there was no tumour. The further history of this case I do not know, but that the conclusion may not have been justifiable appears from a subsequent case by the same author jointly with Mac Callan<sup>4</sup> in 1903. There was a detachment of doubtful nature. It did not vibrate. Yet there was no pain and the vitreous was clear. When the eye was excised a typical melanotic sarcoma of the choroid was found, with a simple detachment of the retina accompanying it.

But the most complete and recent article of which I am cognisant is that of Parsons<sup>5</sup>, and in view of the great interest and importance of the subject I propose to quote it at considerable length. There can be little doubt, says Parsons, that the detachment is due to secretion of fluid from the choroid. The tumour acts as an irritant or foreign body, so that more fluid than normal is poured out from the vessels. There is histological evidence of this irritation in the round celled infiltration which is found in the quasi-normal choroid at the periphery of the growth. Parsons holds that it is proved (from the cases he quotes)

(1) that retinal detachment occurs earlier in sarcoma of the choroid than would be gathered from the ordinary text-book description. (2) That apart from the elevation at the site of the growth, the detachment manifests itself invariably as a shallow, simple detachment over the lower hemisphere. (3) That this detachment is frequently entirely isolated from the tumour, the intervening retina being in normal application to the choroid. (4) That this is invariably the case when the tumour is in the upper hemisphere. When the detachment is continuous with the elevation at the site of the tumour it is, in the early stages, merely due to the accident of the position of the growth, *i.e.*, near or in the lower hemisphere. (5) That this isolated detachment is simply the first stage of the total detachment which eventually supervenes.

The foregoing deductions do not apply to the earliest stages of detachment of the ciliary body, for here there is no detachment of the retina. It is only at a later stage, when the tumour encroaches upon the choroid, that detachment of the retina occurs. . . . The fluid accumulates beneath the retina and gravitates, hence the detachment invariably commences in the lower hemisphere. The author proceeds to show that the fluid is not the normal ocular lymph but a highly albuminous fluid, more like blood plasma. The secondary glaucoma which supervenes is caused by the accumulation of large quantities of albuminous subretinal fluid which is imprisoned by the retina and cannot filter out of the eye.

In thus calling attention very definitely to the pitfalls in the way of diagnosis of simple detachment from detachment accompanying, though not necessarily covering, a choroidal tumour Parsons has done us good service. To be forewarned is to be forearmed, and in every case of retinal detachment there ought to be at the back of our consciousness the memory of these possibilities. Apart from the usual considerations of the refraction, the history, the tension, the fields of vision, diaphanoscopy, I am not aware of any high road to a differential diagnosis at present open to us, if the actual tumour be invisible with the ophthalmoscope. But should there be a suspicion that a floating detachment in the lower part of the eye is covering a tumour, certain further methods have been suggested for the establishment of the diagnosis. "It has been suggested by von Graefe that atropin may be instilled, after explanation to the patient of the object, to try to produce a glaucomatous state. Hirschberg advocated puncture of the sclera to draw off the fluid from the floating separation. Fraenkel punctured the sclera with a needle to feel the separation or even to puncture it to feel what was below it. Jackson has, with others, suggested the use of ophthalmoscopic examination, using direct sunlight, which will penetrate an ordinary separation, and possibly reveal the existence of a solid mass below." (19).

Sub-retinal cysticercus should be remembered as a possibility. In this "a rounded, rather sharply circumscribed detachment is found, beneath which may be recognised the bluish-grey cysticercus bladder with its lighter coloured margin. The detached retina is not tremulous, but spontaneous movements may be made out through it taking place in the bladder" (Fuchs' *Text Book*).

### Medico-Legal Aspects of Detachment.

Next in importance, to the distinction between simple detachment and that of tumour, is the diagnosis, actual or prospective, of detachment following blows, slight or severe, when the question of compensation comes into play. Such compensation may be demanded of a railway company—for instance, by a passenger—or of an employer by his employée. Indeed, as these sheets are going to press, I have heard of a



case in which a myopic individual, who suffered a retinal detachment after sneezing and violent nose-blowing, has claimed compensation from an Accident Assurance Company on the ground that the detachment was an accident. If it were merely a question of immediate obvious detachment following an obvious injury, where a previously sound eye could be proved, there would or should be no difficulty. But the matter is not so simple. In the first place, it was long ago pointed out by Galezowski, as has been mentioned already in this Review, that myopic eyes are subject to detachment on *trivial* injury; in the second place, there are cases on record which seem to show that a detachment may come on late after an injury, and there are cases which indicate the probability of an early small detachment after trauma, which detachment has passed unnoticed, has spread backwards in the eye, and has afterwards caused loss of vision. The importance of a proper appreciation of these facts is obvious to all who may have occasion to be called in consultation as experts, when an eye injury leads to questions of compensation. There are, then, two principal points for the consideration of the ophthalmic surgeon. Firstly, is the myopic eye more subject to detachment than the emmetropic, as the result of a blow which may seem trivial? Secondly, if detachment is observed late, in a case stated to be due to injury, is it to be supposed that this means late onset of detachment or late diagnosis?

Regarding the first question, much weight must necessarily be given to the opinion of Galezowski, who, after an enormous experience of eye disease, held that myopia predisposes to traumatic detachment; even though we do not necessarily go so far as to suppose with him that the *fact* of myopia is more important than the *degree*, and that a trauma, however slight, is the principal provoking cause of myopic detachments in general (see this Review, THE OPHTHALMOSCOPE for November, p. 748).

Galezowski gives an answer not only to the first question, but partially to the second one. He says detachment may come on in myopes long after the trauma, and that there may be no relation between the severity of the injury and the amount of intraocular change. But it is not only in myopes that detachment has been observed as a late effect of injury. Without prejudice to the question of late onset *versus* late diagnosis, detachment has been observed late in non-myopic individuals. In the endeavour to assist the answering of the questions I have put forward I am able to quote some cases. They are not sufficiently numerous to prove very much, but they serve to place one on guard with reference to traumatic detachment as it may turn up in a law court.

Saemisch<sup>12</sup> saw detachment follow a rupture of the choroid at an interval of more than six months. Tzatzkne<sup>13</sup> observed the onset of a permanent detachment two years after a scleral wound.

The foregoing two cases represent gross injuries followed by late detachment. The following were less severe and occurred in myopes and emmetropes.

Amman's<sup>14</sup> patient, a myope of 4.5 D, received a blow on the eye from his wife's elbow. The pain soon passed off, but *one month* later the vision was noticed by the patient to have suddenly deteriorated. This was found to be due to detachment. The important point about this case is that the fellow eye was practically blind, and therefore the patient would notice any defect in vision at once. The case is therefore one tending to prove *late onset*. Another case of Amman's is that of a myope aged 50 years, who was struck on the side of the head with a wooden wedge. No disturbance of vision followed. *Three weeks* later there was sudden deterioration of vision due to detachment upwards and outwards. The patient

was intelligent, and would have noticed anything wrong, and the detachment was above, two points which, when taken together, tend to prove *late onset*.

Weill's<sup>15</sup> patient was an emmetrope, who was struck on the side of the face by a falling hammer. Great swelling of lids and some blood in the anterior chamber. The fundus appeared quite normal, and the eye was kept under observation. About *two months* later peripheral detachment came on suddenly. This case, *under skilled observation* from the first is also in favour of *late onset*.

In Cramer's case<sup>16</sup>, detachment appeared *five weeks* after a blow on the eye with a piece of wood, and caused loss of vision in twenty-four hours. The retina was torn: the eye was emmetropic. The author regards the case as one of *late onset*.

Pfalz<sup>17</sup> regards his case, and others like it, as cases of *late diagnosis*. Pfalz's patient, aged 31 years, had received a blow on the eyeball which had caused no definite injury to the globe. Detachment of the retina followed in *one month*. To quote the abstract in THE OPHTHALMOSCOPE: "The author explains these cases by assuming that the trauma causes some injury to the iris or ciliary body with a detachment at or near the ora serrata, with a sub-retinal effusion. This, on account of the uveal injury or other cause, is not absorbed, and the detachment spreads slowly. These cases, therefore are not genuine instances of late detachment, but only of late diagnosis, as detachment well forward cannot be diagnosed clinically."

A similar view to that of Pfalz is taken by Onken<sup>18</sup>, in whose patient the eye went suddenly blind from detachment *four weeks* after a blow on it. The patient was highly myopic. The author emphasises the necessity of careful ophthalmoscopic and perimetric examination in order to detect any commencing change in cases where a blow has not resulted in immediate apparent injury.

For most of the foregoing cases I am much indebted to the careful abstracts in this journal by Dr. A. Levy, abstracts which seem to leave nothing to be desired in the way of succinctness. I have taken the liberty of emphasising, by means of italics, some of the points which bear upon my thesis, which is as follows:—

That reported cases show that deterioration of vision, due to obvious detachment of the retina, may not come on until weeks or months after an injury which, in its immediate results, may have seemed to be trivial; that while myopia seems in all likelihood to be a contributory factor, detachment occurs under like circumstances with other states of refraction; that there is a certain amount of evidence in favour of the view that, in some cases at any rate, the actual detachment commences at the late date, though the cause of it is at present unknown; that there is always the possibility of a small peripheral detachment, which occurs *early* and only obtrudes itself *late* on the notice of the patient by extending towards the centre: and that it behoves every ophthalmic surgeon to examine his accident cases for retinal detachment at the earliest possible moment after the accident.

### Prospective Diagnosis. Prodromata.

So far as possible, I have endeavoured to avoid the commonplace. And it is because it seems likely that we do not yet do enough for our myopic patients from the prophylactic hygienic standpoint, that I venture to refer to the strong views held by Galezowski<sup>11</sup>, in the early eighties, on the value of premonitory symptoms of detachment.

"In my opinion," says Galezowski, "prodromal phenomena are always a sure indication of a congestive process going on in an eye which will subsequently suffer from detachment. And while in hypermetropic eyes,

phenomena, apparently congestive, do not indicate future detachment at all, in myopic eyes, on the contrary, we should pay great attention when such congestive phenomena appear with regularity."

The prodromata referred to consist of temporary obscurations of vision, as by a veil, shadow or cloud floating up and down, luminous sensations such as the appearance of balls of fire, and, most important of all, color phenomena and color difficulties such as are found in actual detachment. It is only right to say that in the discussion on the paper in which Galezowski emphasised the importance of prodromata, Abadie stated that in his opinion simple detachment comes on in myopes without previous symptoms. But surely we have all had complaints of various visual disturbances from our highly myopic patients? Are we sufficiently attentive to them? Do we have it before our minds distinctly that detachment may be imminent? Should the myopic patient who begins to complain of certain changes in what he sees, of whatever nature these may be, be advised complete rest in bed and abstention from eye work for a longer or shorter period?

I am only too well aware of the difficulty in persuading the myope of any such necessity. The average myope is an unconscionable person who will promise not to use his eyes for near work and who will straightway go and do what he has promised not to do. Having one eye, perhaps, almost blind, and the other with a far-point at a few inches, he will still fail to realise his danger. And it is on this account that I raise the question whether our prognosis and our instructions as to the necessity of rest are couched in sufficiently forcible terms in such severe cases of myopia as these.

(To be concluded.)

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- (<sup>10</sup>) D'Oench, F. E. — *Medical Record*, 1889.
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- (<sup>13</sup>) Tzatzkne. — *Westnik. Ophtal.*, 1905. Abstract in *Annales d'Oculistique*, T. CXXXIV, 1905.
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- (<sup>17</sup>) Pfalz. — *Zeitschrift für Augenheilkunde*, 1904. Abstract as above.
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## THE OXFORD OPHTHALMOLOGICAL CONGRESS.

Readers of THE OPHTHALMOSCOPE will doubtless be glad to have before them the constitution of the Oxford Ophthalmological Congress, as approved at a meeting of the council held on December 9th, 1909. It is as under :

### CONSTITUTION.

1.—The Oxford Ophthalmological Congress shall be for the scientific and social intercourse of legally qualified medical practitioners who are interested in ophthalmology, and who have been elected by the Council.

2.—The management of the Congress shall be vested in a Council consisting of :—Sir Anderson Crichtett, Bart., Sir Henry Swanzy, Professor William Osler, Dr. Hill Griffith, Dr. George Mackay, Mr. Richardson Cross, Mr. Priestley Smith, Dr. L. Werner, Mr. Secker Walker, Dr. A. M. Ramsay, Mr. Edgar Browne, Dr. A. W. Sandford, Mr. E. T. Collins, Mr. Arnold Lawson, Mr. W. A. Brailey, Mr. Henry Juler, Professor Greeff (Berlin), Professor Deutschmann (Hamburg), Professor Dufour (Lausanne), Dr. Darier (Paris), Dr. W. Reber (Philadelphia), Mr. R. W. Doyne, and Mr. Sydney Stephenson. The Council shall have power to co-opt members of the Congress whose medical standing is not less than fifteen years. It shall also be within the competence of the Council to remove the name of any Member of the Congress without reason assigned.

3.—The Executive Officers of the Congress, who shall be elected by the Council, shall include a Master, a Treasurer, and a Secretary to be elected annually.

4.—The Entrance fee shall be 10s 6d. There shall be no annual subscription, but a contribution of 10s. 6d., shall be payable on each occasion that a member shall attend the Congress.

The executive officers are : Master, Mr. Robert W. Doyne ; Treasurer, Sir Anderson Crichtett, Bart. ; and Secretary, Mr. Sydney Stephenson.

## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

### I.—THE PUPIL.

- (1) Lohmann, W.—Is convergence or accommodation the cause of contraction of the pupil when the eye is directed at a near object. (*Ueber die Frage : Konvergenz oder Akkommodations-Verengerung der Pupille bei der Naheinstellung?*) *Bericht der Ophthalmologischen Gesellschaft, Heidelberg*, 1908 (Volume published in 1909, p. 264).
- (2) Rönne, H.—On the tonic Accommodation reaction of pupils that do not react to light. (*Ueber tonische Akkommodations reaktion lichtstaner Pupillen.*) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1909.

(1) Lohmann (Munich) first brings forward an interesting case in which, as the result of post-diphtheritic paralysis, the power of accommodation and the corresponding pupil reflex were lost, while the power of convergence and the light reflex were normal. As the author says, the case is interesting but does not elucidate our problem. Heddäus points out that the question is still an open one. Bach holds that the myosis is more associated with convergence than with accommodation, whereas Hering holds exactly the opposite view. The author has modified Hering's experiments, and finds that alterations of the pupil certainly do occur when accommodation alters and convergence or divergence is absent. On the other hand, prism experiments show that the



opposite is also true. Again, myopes with no accommodation show a convergence reflex, and within certain limits presbyopes do not. The truth seems to be that both accommodation and convergence are intimately associated in the reflex, and either alone is capable of invoking it.

T. HARRISON BUTLER.

(2) **Rønne**, of Copenhagen, reports an instance of that rare condition of the pupils, a description of which by the reviewer is to be found in the Ophthalmological Society's *Transactions*, Vol. 26, page 50. His case was that of a girl, aged 13 years, who had been seen six years before on account of right internal ophthalmoplegia. She presented now a dilated, not perfectly round right pupil, of a diameter of 5 to 6 millimeters. There was not a trace of direct or consensual light reflex in this eye. On accommodation, the right pupil contracted slowly, reaching a diameter of  $2\frac{1}{2}$  mm. after a lapse of 5 seconds. If after an accommodative effort the patient looked into the distance, the pupil remained narrow for about ten seconds, only then starting to dilate slowly to its original size in the course of 30 to 45 seconds. The same phenomenon occurred on forcible closure of the lids. Accommodation of the right eye was still slightly impaired, its relaxation also somewhat delayed, but not nearly to the same degree as the pupil's dilatation. The left pupil was normal in every respect, nor could a general examination reveal any other anomaly in the child. It is interesting that in this case the peculiar condition of the pupil was distinctly the outcome of a complete internal ophthalmoplegia.

C. MARKUS.

## II.—GENESIS OF CONJUGATE DEVIATION OF THE EYES.

**Rønne, Henning.**—The genesis of conjugate deviation of the eyes.  
*Ophthalmology*, October, 1909.

The commonly accepted theory of the origin of conjugate deviation of the eyes is that the lesion has destroyed the cortical centre for conjugate lateral movements, the eyes being thus left at the mercy of the antagonists. Bard, in 1904, propounded a theory which makes the symptom depend on a unilateral sensory palsy, which allows impulses from the eyes, ears, and semicircular canals to reach the oculomotor nerve of one side only. His objection to the theory of paralysis of a motor centre is that paralysis of a cortical motor centre cannot cause loss of tonus in the paralysed muscles. Many objections have been raised to Bard's theory, and **Rønne** (Copenhagen) does not accept it, but he agrees with Bard that the motor theory, in its old form, does not quite satisfactorily explain the phenomenon.

He points out that the deviation from a peripheral paralysis of the abducens is not nearly so great as that found in conjugate deviation, although the tonus of the external rectus must be less in the former than in the latter, in which the nucleus of the abducens is intact, and one of the paralysed muscles, the internus, still functionates in convergence and cannot be supposed to be lacking in tone.

As an alternative theory we might assume that, at the same time as the paralysis of the motor centre, there is irritation of the centre for the antagonist, but such an assumption presents the difficulty that the centre for the antagonist is in the other hemisphere.



Rönne submits a theory which lacks proof but is strongly supported by well ascertained facts. He assumes that the cortical motor centre for each muscle is at the same time a centre for the inhibition of its antagonist. Certain facts support this view. For instance, in a case of peripheral paralysis of the abducens there is convergence of the affected eye, and if the patient is asked to look towards the paralysed side, the affected eye makes a slight movement in that direction. This movement is generally supposed to be due, not to contraction of the paralysed muscle, but to inhibition of its antagonist. Such an inhibitory impulse is much more likely to come from the same side as the motor impulse: indeed this seems to be proved by the experiments of Sherrington. The inhibitory influence would pass to the centre concerned by association fibres through the corpus callosum or other commissure.

Rönne follows Bach and Monakow in considering the cerebellar form of conjugate deviation an irritative lesion. The conjugate deviation of pontine lesions involves both deviation and paralysis of conjugate movement. The latter is explained by interruption of the posterior longitudinal bundle, while the deviation, which is less often present than the paralysis, is caused by irritation of the same path in the opposite half of the pons.

A. J. BALLANTYNE.

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### III.—CATARACT.

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- (1) Purtscher, O.—On cataract after thyroid operations. (Ueber Starbildung nach Knopfoperation.) *Centralbl. f. prak. Augenheilk.*, April, 1909.
- (2) Börnstein, F.—A contribution to the question of the cyto-toxic origin of subcapsular senile cataract. (Beitrag zur Frage der cytotoxischen Entstehung des subkapsulären Alterstars.) *Zeitschrift für Augenheilkunde*, Juni, 1909.
- (3) Tooke, Frederick.—Capsule forceps in cataract extraction. *Ophthalmology*, October, 1909.
- (4) Würdemann, H. V.—The expression of cataract in its capsule. *Ophthalmology*, October, 1909.
- (5) Veasey, C. A.—Some unusual complications occurring during and following the extraction of cataract. *Ophthalmology*, October, 1909.

(1) With the increasing frequency of operations on the thyroid gland, the sequelæ of such operations become of great importance, and one of these is the occurrence of cataract. Purtscher had such a case. The patient, a woman aged 26, came on account of her bad sight, and was found to have bilateral cataracts. Two years previously the left half and a portion of the isthmus of her thyroid gland and an adenoma of the right half was removed. Three days after operation, she had an attack of tetany of the hands, head, chest, and abdominal muscles. These attacks lasted for about three weeks, and then gradually lessened under the administration of thyroid tablets. Immediately after the operation, she suffered from loss of hair and of all her nails, and her vision also failed rapidly. When two years

later she was admitted to the hospital for the cataract operation, her condition was seen to be very bad: she looked like a lean old woman. The head was sparsely covered with short woolly hair. The skin of the face looked like a brown mask. The skin generally was dry and there was brown pigmentation of the arms. Chronic eczema of the buttocks was present.

Two days after discission of the right cataract, the patient had an attack of tetany. This was followed by others, becoming more and more severe, and she died three weeks later.

The occurrence of cataract in cases of tetany has been previously described by many authors. It is an infrequent but well-defined complication of tetany, and is apparently independent of the cause of the tetany, and in these cases of cataract after thyroid operations, cataract only occurs in those who have attacks of tetany. The question thus arises as to the cause of the tetany in these cases, and it is generally held to be due to the accidental removal at the time of the operation of the parathyroids as well as the thyroid gland.

A. LEVY.

(2) **Börnstein** (Strassburg).—Römer, at the Heidelberg Congress in 1908, described how he had obtained satisfactory results by feeding the subject of subcapsular cataract with a preparation of crystalline lenses, and said that this method of treatment was not an empirical one, but the logical consequence of his theory that this form of cataract was caused by the presence of specific cytotoxins in the blood. He seeks to attach these poisons to lens albumin, which he supposes appears in the blood of persons feeding on lenses. The well-known clinical appearance of senile cataract is due to the coupling of lens albumin with cytotoxin. This is caused by a failure in the secreting power of the senile eye, for it may be supposed that these toxins are present in the blood of persons without cataract. Römer declares that he has detected in human serum albumin groups possessing a specific affinity for lens-albumin. He made use of the so-called complement *separation* reaction (*Komplement ablenkungs Reaction*). This reaction is the most delicate which we possess for differentiating albumins. It depends upon the phenomenon discovered by Bordet and Gengou of the fixing of a complement in the presence of antigen and antibodies. It detects no less than 1/50,000,000 of the amount which can be determined by the precipitin reaction.

Börnstein criticises these experiments, and thinks that they are vitiated by the fact that Römer used active sera. He has undertaken similar experiments, using sera which had been rendered inactive by heating to 56 Cent. for half-an-hour.

Three types of individuals were examined. Young patients without cataract; senile individuals with rapidly developing subcapsular cataract; and, finally, senile persons with intact lenses. The hæmolytic solution consisted of 5 per cent. suspension of sheep corpuscles in normal saline. The amboceptor was provided by the serum of rabbits which had been previously treated with injections of sheep's blood. Guinea pig's serum served as complement. The result of the experiments is shown in three tables.

No inhibition was caused by any of the twelve sera examined, whereas the feebly precipitating serum of a rabbit which had been injected with lenses exerted a complete anti-hæmolytic action. The experiments do not confirm Römer's theory, no specific antibodies were detected, and therefore the research has not succeeded in removing the lens diet therapy from the realm of empiricism.

T. HARRISON BUTLER.

(3) **Tooke**, of Montreal, in this paper puts forward a well reasoned plea for the use of capsule forceps as a routine procedure in cataract extraction, stating the familiar reasons for its adoption and replying to several criticisms

commonly urged against its use. His statements regarding the dangers of the inclusion of capsule between the lips of the wound after capsulotomy are supported by three micro-photographs showing incomplete union of the section from inclusion of capsule.

A. J. BALLANTYNE.

(4) **Würdemann**, of Seattle, does not approve either of the "fulsome praise" bestowed on Smith as the originator of the so-called "Smith's operation," or of the criticism of the operation from the theoretical standpoint for which he blames "our British brethren." The procedure, he says, is not to be learned from description or even by seeing it done, but by doing it. His own opinion of the merits of the operation may be gathered from his statement that "if the dread of the remote complications is relieved by further experience and the ultimate results of the operation are as good as has been the case in my hands to date, I shall continue to practice expression for most cataracts. . . . I now consider it to be adapted for practically all forms of uncomplicated cataracts, the exceptions being the traumatic, infantile, adolescent, and hypermature forms; and preferable for immature or slowly progressing lenticular opacities." His reasons, of course, are the saving of the time which would have been spent in awaiting the ripening before other forms of operation, the avoidance of secondary dissections, and the general excellence of the visual results.

Würdemann has performed the operation in 45 cases within the last two years, and believes that his results are better than in 155 other extractions done during the same period.

He gives details of the operation as he performs it.—The incision he prefers is a corneo-scleral one, with a conjunctival flap. To control the upper lid, he employs Fisher's lid-holder. After the incision is made, the patient should look, not down, but straight ahead. A small iridectomy is done, embracing only the margin of the iris and the sphincter. The rest of the operation he divides into four stages—retroversion (pressure with the hook on the lower edge of the lens), anteversion (continued pressure causing the lower edge of the lens to come forward and turn a somersault, presentation (the lower edge of the lens appearing in the wound), and delivery, the process being perhaps assisted by the end of the hook or by the forceps.

Complications arise from the use of a wrong incision. Since using Fisher's lid-holder, he has had prolapse of vitreous in only five per cent. of his cases. In two out of the 45 a secondary operation had to be done on account of capsule stripped off and left in the eye.

A. J. BALLANTYNE.

(5) In an interesting paper **Veasey**, of Philadelphia, recounts some unusual experiences which he has met with in connection with the extraction of cataract. His first case is surely one of the most extraordinary on record:

A man, aged 75, in good health, was operated on for removal of a mature senile cataract. When the corneal incision was almost completed, he lost control of himself, squeezed his lids, and struck the operator a violent blow on the arm with his fist. The fixation forceps flew out of his hand across the room, the lens shot out of the eye, and there was a large prolapse of iris and vitreous. After an interval, an iridectomy was done, and the protruding vitreous excised. Next morning the dressings were round the patient's neck. On the third day he was found amusing himself in his yard with the dressings pushed up on his forehead. It was learned later that he had indulged in sexual intercourse a few hours after the operation.

In spite of these adverse conditions the eye did well. The corrected vision five weeks later was  $\frac{6}{3}$ , and this good result was maintained until death four years later.

The next case described was that of a man of 63 who had a combined extraction in the right with good result, and two years later combined extraction in the left. The latter was followed in about twelve hours by intra-ocular hæmorrhage which led to the loss of the eye. The subject of post-operative hæmorrhage is briefly discussed.

The third case is one of extraction in a slightly demented patient. The operation had a good result, but was followed by increase of the dementia and death.

In the fourth case, one of extraction in a woman aged 52, the operation was carried out without complication, but no union of the wound occurred. On the seventeenth day there was infection of the flap, which was successfully treated with silver nitrate, carbolic acid, and the cautery, leaving a dense leucoma. The cause of the failure to heal was not discovered.

The fifth case was a man of 73 who, when on the table ready for operation, took a general convulsion with loss of consciousness. He had never had a convulsion before. The operation was proceeded with, and recovery was uneventful.

In the sixth case a sarcoma of the iris was removed by a broad iridectomy. Eight months later a mature cataract was removed from the same eye. Delirium followed on the second night and lasted for several days, until the eye which had not been operated upon was relieved of its bandage.

Case seven was one of extraction of a lens dislocated by injury. Late infection of the wound occurred, but was successfully treated with perfect visual result.

The last case was a youth of 18 with progressive cataract and some choroidal changes. Five years from the time of the first observation, the lens of one eye was removed by simple linear extraction with perfect result. In the following year discission was performed in the other eye. Two months later the pupil was clear and glasses gave normal vision. The field of vision was normal. Three weeks later failing vision in that eye led to examination and to the detection of a sarcoma far forward in the choroid with a corresponding loss of the field. Examination of the enucleated eye confirmed the diagnosis

A. J. BALLANTYNE.

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#### IV.—SURGICAL TREATMENT OF OPTIC NEURITIS.

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- (1) Charles, J. W.—The influence of the field of vision in determining for or against a palliative operation for papillœdema. With report of a case. *American Journal of Ophthalmology*, June, 1909.
- (2) de Schweinitz, G. E., and Holloway, T. B.—The operative treatment of papillœdema dependent upon increased intracranial tension. *Therapeutic Gazette*, 15th July, 1909.
- (3) Cabannes.—A contribution to the study of trephining in cerebral tumours with choked disc or optic neuritis. (Contribution à l'étude de la trépanation dans les tumeurs cérébrales avec stase papillaire ou névrite optique.) *La Clinique Ophthalmologique*, 10 août, 1909.

(1) "The operation of cranial decompression for the purpose of saving vision or of prolonging life has become so successful and the procedure so simplified and perfected in its refinements that a note of warning should be sounded against too great radicalism in deciding so serious a question as the advisability of a capital operation." Charles (St. Louis), speaking to this theme, points to the uncertainty of the indications offered by choked disc as to the future of the vision: and relates a case in which, operation having been



postponed on account of the physical condition of the patient, the visual field improved under mercurial inunction and internal treatment with strychnine. While the ophthalmic reports, with charts of the visual fields, are very complete, one is impelled to say that the author leaves the original complaint, which gave rise to the optic neuritis, very much to the imagination of the reader.

ERNEST THOMSON.

(2) **de Schweinitz** and **Holloway's** paper is an elaboration and apparently a completion—with bibliography—of their previous article in the *Transactions of the College of Physicians of Philadelphia*, 1908, an abstract of which has already appeared in THE OPHTHALMOSCOPE for June, 1909. It is divided into similar headings but is provided with a fuller introductory and historical chapter and with a table of operations showing the results to vision and changes in the optic nerve head. A considerable number of case histories is introduced under the heading "Effects of Operative Procedure" (a) When the vision is good in both eyes prior to operation; (b) when vision is good in one eye but practically lost in the other eye prior to operation; (c) when the vision is very defective in both eyes. The conclusions reached are almost identical with those in the former paper. The following is, however, additional:—"In non-syphilitic cases time devoted to the administration of iodides and mercurials is time wasted, but after the operation their exhibition appears to exert a beneficial influence." Also, in conclusion 3, the words which follow the word "remains" have been omitted. ERNEST THOMSON.

(3) **Cabannes**, of Bordeaux, after pointing out that "choked disc" and "optic neuritis" may, either of them or one after the other, be symptoms in the course of cerebral or cerebellar neoplasms, and after mentioning the names of the principal writers on the subject of the relation between choked disc and cerebral tumour, and trephining as a method of treatment, without giving the name of a single English or American author, relates the history of a case of his own. The case hardly warrants full quotation. Briefly, however, a man of 53 years when first seen by Cabannes had suffered from Jacksonian epilepsy for seven years and from progressive deterioration of sight for two years. He could now only count fingers at 1·5 metres, and ophthalmoscopically presented the picture of post-neuritic atrophy. After decompressive trephining over the Rolandic area, the epilepsy was considerably modified and vision improved up to fingers at 4 metres, while the patient could recognise colours and distinguish the stars. The tumour found was a psammoma.

ERNEST THOMSON.

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## V.—CONGENITAL WORD-BLINDNESS.

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**Rutherford, W. J.**—The ætiology of congenital word-blindness; with an example. *British Journal Children's Diseases*, November, 1909.

After alluding (very cursorily) to the literature of congenital word-blindness, or he prefers to call the condition, "dyslexia congenitalis," **Rutherford**, of Renfrew, describes a case observed by him in a girl, ten years of age, who could not read without difficulty even words of one syllable. She could not remember words that had been pointed out to her but the moment before, and, when questioned, either made the wildest guesses or else lapsed into frightened silence. She was able to write to copy but not to dictation. Her reading in



class was absolute nonsense, since she put into the piece all sorts of words, apparently for the sake of saying something rather than of standing silent. She had been transferred from one school to another, as the teacher she had been under had failed to appreciate her curious limitations and had ridiculed her before the other children. She was in the I standard with children of six years and upwards, instead of being, as she should at her age, in the III school standard. She was unable to give the pronouncation of a word the letters of which were spelled over to her, a possible indication Rutherford thinks) that in her case the auditory centre shared in the defect of the visual. As to her other characteristics, the girl was neat in her person, sharp at figures, could readily appreciate the meaning of coloured pictures, and, finally, was of average intelligence.

According to the author, the family history of the patient illustrates very aptly the effect of defective hereditary material in the causation of congenital word-blindness, and proves that the cerebral lesion (or localised aplasia, as it probably is in these cases) may depend on a cause actually antecedent to the first cell-divisions of the fertilised ovum. Briefly, a younger sister, aged six years, could read fairly well for her age, although, like the patient, she was nervous and easily frightened. Both these children were the youngest of a family of five, all illegitimate, the other three members of which had died in infancy. The mother (herself illegitimate) had had no fewer than three natural children before she had reached the age of twenty-five years. This woman suffered from asthma, hepatic cirrhosis, and goitre. The parents and grandparents of Rutherford's patient were illiterate. The maternal grandmother had a family of fifteen children, of whom some were degenerate and others occupied more or less responsible positions.

Rutherford concludes that "the condition is thus seen to be the result of a reversion to the pre-civilised type, as the result of loss or destruction of certain of the later and more highly specialised determinants in the gametic idioplasm, and as such it falls in line with many other of the phenomena of atavism."

SYDNEY STEPHENSON.

## VI.—TUMOURS OF THE ORBIT.

- (1) Calderaro.—Tumours of the orbit: a clinical and anatomico-pathological study. (Sui tumori dell' orbita: Contributo clinico ed anatomo-patologico.) *La Clinica Oculistica*, November, 1908.
- (2) Meller, J.—A case of pseudo-leucaemic orbital tumours. (Ein Fall von pseudoleukemischen orbital-geschwülsten.) *Zeitschrift für Augenheilkunde*, January, 1909.

(1) The diagnosis of tumours of the orbit is by no means easy. Calderaro has invented a simple instrument for measuring the exophthalmos, which is a constant symptom. He has also carried out experiments on the relation between the mass in the orbit and the degree of proptosis, and concludes that for every millimeter of proptosis, there is present a cubic centimeter of growth behind the eye.

The cases which he records in this paper are three in number, and illustrate the difficulty in diagnosis between tumours of the optic nerve and tumours affecting the apex of the orbit. The symptoms characteristic of a growth

of the nerve are said to be exophthalmos, irreducible and in direction forwards and a little up and outwards; preservation of considerable motility of the globe, and early loss of vision, without marked ophthalmoscopic signs.

In Calderaro's first case, however, the symptoms—complete loss of movement, with conservation of good vision—seemed to point away from the optic nerve; at the time of operation, there was found a large mass invading the optic nerve at some distance behind the eye, and commencing in the arachnoid. The rapid growth at the apex of the orbit had early pressed on the branches of the third and sixth nerves near to the sphenoidal fissure.

The third case, on the other hand, which had the classical symptoms of tumour of the optic nerve, was proved to have a small hard mass, situated at the apex of the orbit, and pressing on the nerve immediately after its passage through the optic foramen.

Calderaro points out that the ophthalmoscopic signs will depend on the position of the pressure on the optic nerve; if the point invaded is behind the entrance of the retinal vessels, the ophthalmoscopic signs will be slight or wanting in the early stages.

To his mind, the best sign of distinction between a tumour of the nerve and one within the muscular cone, is the reducibility of the exophthalmos; if the nerve be involved for any length, the reducibility is small, because the nerve cannot change its curve.

HAROLD GRIMSDALE.

(2) **Meller** (Vienna).—When first seen, the patient, aged 57, had on the left side an enlarged lacrymal gland which caused a swelling of the upper lid and great exophthalmos; it had given rise to keratitis and lagophthalmos. There was a similar, but much smaller, tumour of the right lacrymal gland, but no exophthalmos. R.V. = 6/8; eye normal. The lymphatic glands are enlarged all over the body, as is the spleen and the liver. *Blood*: Hæmoglobin 70 per cent.; red cells, 5,080,000; white 5,500. Differential count.—Polynuclear 70 per cent, and large mononuclear 12 per cent. The blood examination gave evidence of extreme irritation of the marrow. These signs showed that there was a general lymphomatous disease. The condition developed rapidly. The tumour of the left orbit grew to a huge ulcerated mass, the size of a man's fist, which is shewn in a very accurate, if somewhat horrible, drawing.

The autopsy shewed general enlargement of lymphatic glands; the orbital tumours had replaced the normal tissue of the lids and orbits but had nowhere attacked bone. The tumours were composed of small lymphocytes. The disease was pseudoleucæmic with local malignancy (lymphosarcoma).

T. HARRISON BUTLER.

## VII.—EXOPHTHALMOS AND CRANIAL DEFORMITY.

**Redslob, E.**—On exophthalmos associated with deformities of the skull. (Ueber Exophthalmos bei Schädelmissbildungen.) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1909.

Ocular changes, often incidental to oxycephaly, have been observed by **Redslob**, of Strassburg, in association with a much rarer deformity of the skull, namely, scaphocephaly. The case was that of a boy, aged 8½ years, of normal intelligence. The peculiar shape of his head and prominence of

eyes had been noticed immediately after his birth, which had been quite normal. When the child was seven months old, increasing widening of the coronary suture, with bulging and pulsation of the fontanelle gave evidence of hydrocephalus. When seen by Redslob, the boy presented the following peculiarities: the forehead was much broader than the back of the head,



steep, slightly overhanging. From the top of the forehead the greatly lengthened skull sloped towards the nape of the neck and ended in a narrow prominent occiput. The frontal bones were felt to overlap the parietal bones. The latter met at an angle, the line of their junction being marked by a prominent ridge which was continued to the middle of the forehead. A considerable asymmetry of the head was produced by a stronger development of the right side of the face and a greater curvature of the frontal, parietal, and occipital bones; moreover, the right eye was on a lower level than the left. Exophthalmos of a very high degree was present, the corneæ projecting  $1\frac{1}{2}$  cm, from the orbital margin. The discs were greyish-white (V. 0.7) and surrounded by opaque nerve-fibres.

This deformity of the skull is due to premature ossification of the sagittal suture. On the other hand, the exophthalmos is accounted for by the supervening hydrocephalus and yielding of the roof and posterior wall of the orbits to increased intracranial pressure.

C. MARKUS.

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## VIII.—SYMPATHETIC OPTIC ATROPHY.

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Péchin.—Sympathetic optic atrophy. (Atrophie optique sympathique.)  
*Archives d'Ophtalmologie*, novembre, 1909.

Péchin, of Paris, discusses the symptomatology of sympathetic affections of the eye, and, in doing so, says that if everybody admits the existence of the form characterised by lesions of the uveal tract, that is not the

case as regards certain other forms. Cuignet included as sympathetic manifestations almost all kinds of disease of the eye. On the other hand, contemporary authors admit scarcely anything beyond lesions of the uveal tract, as iritis, irido-cyclitis, and choroiditis. Neuritis, retinitis, and neuro-retinitis are left on one side as manifestations of sympathetic disease.

Péchin believes that we should not accept too readily the view that sympathetic irritation is due to a psychoneurosis. To his thinking, it is not doubtful that a retro-bulbar neuritis, unaccompanied, it may be, by ophthalmoscopic signs until considerably later, may be associated with lacrymation, photophobia, asthenopia, disturbance of accommodation, and amblyopia with contraction of the visual field. The reserve with which neurosis should be admitted should be so much the greater since the vocable "hysteria" does not possess the same significance as it once did. There is, in point of fact, a special form of sympathetic ophthalmia, which is known under the names of sympathetic amblyopia, simple sympathetic atrophy of the optic nerve, anæsthesia or hyperæsthesia of the retina, and retro-bulbar optic neuritis. This form was originally described by Mooren in 1869, and a few cases have since been reported by Brecht and by Rosenmeyer. In 1897 Nuel directed serious attention to this type of disease, of which he gave particulars of sixteen cases, and added six more cases seven years later.

Péchin now gives details of two similar cases :

CASE NO. 1.—An iron-worker, aged 51 years, lost the sight of his left eye from an injury sustained in January, 1895, by the head of a rivet. At the end of several months, he observed temporary obscurations of the sight in his other eye. In September, 1908, the sight fell rapidly, and the failure was accompanied by pain in the frontal and left temporal regions, as well as by a sensation of discomfort on moving the right eye. Right optic atrophy was present. As regards the left eye, on examination about a couple of months later, there was found seclusion of the pupil, and absence even of luminous perception. The vision of the right eye was one-quarter, and its field of vision did not extend beyond  $15^{\circ}$  to  $20^{\circ}$  in any direction. Complete achromatopsia. General condition of patient good : no alcoholism or syphilis.

CASE NO. 2.—A mason of 57 years was injured in his right eye in March, 1906, by a fragment of steel, an accident followed by panophthalmitis. The globe was exenterated six days after the injury, but no foreign body was found. On the seventeenth day, during *lavage* of the parts, the foreign body escaped. Inflammatory symptoms speedily disappeared, but in the meanwhile the left eye became almost blind. Four months after the accident, sight was 1/50, and there was partial atrophy of the optic nerve.

SYDNEY STEPHENSON.

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## IX.—RING-SHAPED OPACITY OF THE LENS.

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- (1) von Merz, A.—Lens opacity: Contribution on the subject of traumatic ring-shaped lens opacity and traumatic mydriasis. (*Beitrag zur traumatischen ringförmigen Linsentrübung und mydriase traumatica.*) *Wochenschrift für Therapie und Hygiene des Auges*, 6 Dezember, 1906.
- (2) Löhlein, W.—Ring-shaped haze of the anterior surface of the lens and papillitis after a contusion. (*Ringförmige Trübung der Linsenvorderfläche und Papillitis nach Kontusionsverletzung.*) *Zeitschrift für Augenheilkunde*, August, 1908.

(1) v. Merz relates the case of a young lady who was struck in the eye by a tennis ball. There were pain, hyphæma, mydriasis, and a pigment pattern of the pupil border was imprinted on the anterior lens capsule. The vision was restored in about a week, but the capsular pigment and the mydriasis persisted when the patient was seen two months later. ERNEST THOMSON.



(2) **Löhlein** (Greifswald).—In 1906 at the Lisbon Congress Vossius drew attention to a ring-shaped opacity which sometimes appears in the anterior capsule after a contusion. The condition is easily overlooked, because it is very transient and is often masked by a hyphæma. Löhlein now describes another case. The author has failed to produce a similar condition in rabbits' and cats' eyes by blows with hammer-like instruments upon the cornea. There must be other ætiological moments than the mere blow. Vossius thought that the ring was due to pressure upon the anterior capsule by the edge of the pupil. The case described presented at first a discoid haze, this became ring-shaped, and on the fourteenth day it had disappeared entirely. In certain cases the haze is associated with a ring of iris pigment on the anterior capsule.

T. HARRISON BUTLER.

## X.—HYALINE DEGENERATION OF THE IRIS.

**Seefelder.**—On the pathological anatomy of hyaline degeneration of the margin of the pupil. (*Zur pathologischen Anatomie der hyalinen Degeneration des Pupillarrandes.*) *Zeitschrift für Augenheilkunde*, April, 1909.

**Seefelder** (Leipzig).—In the 59th volume of *Archiv für Ophthalmologie*, Meller describes the histological examination of four cases of a rare condition, namely, hyaline degeneration of the pupillary margin. The eyes were those of senile individuals who had long lost their sight. The cause of blindness varied: retino-choroiditis, irido-cyclitis, and optic atrophy being among the diseases present. Degenerative changes were found in other parts of the eye, arcus senilis, hyaline areas in the iris, and hyaline degeneration of the ciliary body. The hyaline degeneration of the pupillary margin was, however, astonishingly similar in all the cases. A homogeneous zone at the pupillary edge was covered by a closed row of endothelial cells, and so the margin of the iris was too sharply defined. The boundary towards the normal iris tissue was equally distinctly marked off. Changes in the pigment layer were present which were more developed in those irides which presented the greatest degeneration at the pupillary margin. Fuchs has given a classical account of the disease (v. Graefe's *Arch. f. Ophthal.*, Bd. XXXI, 1885).

The author gives a full description of the microscopical appearances found in another case, which is illustrated by a very good plate. He regards the disease as primarily a hyaline degeneration of the vessels of the iris.

T. HARRISON BUTLER.

## XI.—INFLAMMATION OF THE CONJUNCTIVA.

- (1) **Bargy, Maurice.**—Conjunctivitis due to snake venom. (*Conjonctivite par venin de serpent.*) *La Clinique Ophtalmologique*, 10 octobre, 1907.
- (2) **Gendron and Servel.**—Some considerations on three cases of acute conjunctivitis regarded from the point of view of workmen's accidents. (*Quelques considérations sur trois cas de conjonctivite aigue envisagés au point de vue des accidents du travail.*) *L'Ophtalmologie Provinciale*, T. V, p. 24, février, 1908.



- (3) Hilbert, R.—Blepharitis and acute conjunctivitis from the fresh plants of the *Origanum Marjorana* L. *Wochenschrift f. Ther. und Hygiene des Auges*, Februar 11, 1909.
- (4) Trousseau.—Chronic conjunctivitis after removal of the lacrymal gland. (La conjonctivite chronique après l'ablation de la glande lacrymale.) *Ann. d'Oculistique*, T. CXLI., p. 3, février, 1909.
- (5) Cosmettatos, G. F.—On conjunctivitis of animal origin. (De la conjonctivite toxique d'origine animale.) *XI Congresso Internazionale di Oftalmologia*, Aprile 2-7, 1909, p. 192.
- (6) Gabriélidès, A.—Conjunctivitis produced by *eclabium elaterium*. (Conjonctivite par l'*eclabium elaterium*.) *Archives d'Ophthalmologie*, octobre, 1909.
- (7) Cartil, A.—A case of benign diphtheritic conjunctivitis with persistence of the bacillus for several months after cure. *Revue Générale d'Ophthalmologie*, 3 octobre, 1909.

(1) This short communication by **Bargy**, of Elbeuf, is intended to prove a disputed point as to the virulence or otherwise, when squirted into the human eye, of the saliva of the "spitting serpent," found in the Soudan. A European soldier received in his eye two or three drops of saliva from a reptile which he was endeavouring to destroy. Fairly severe, though non-purulent, conjunctivitis resulted. The cornea was not affected. The conjunctivitis was cured in five days by the use of boric acid and zinc sulphate.

ERNEST THOMSON.

(2) **Gendron** (Lorient) and **Servel** record three cases of conjunctivitis occurring in workmen claiming compensation, in which the diagnosis and prognosis were materially influenced by microscopic examination of the secretion. The first case proved to be gonorrhœal, the second was due to chemical irritation, and the third, in spite of a co-existing gonorrhœa, was due to infection with the Morax-Axenfeld bacillus, and got well rapidly under suitable treatment. It is evident that anyone reporting on these cases without having made a bacteriological examination, would be liable to commit serious mistakes.

R. J. COULTER.

(3) A lad shortly after commencing to tie up in bundles the freshly-cut herbs of sweet marjoram (*Origanum Marjorana* L.), had to desist owing to the hands, face, and eyelids becoming red and swollen accompanied by a pricking and tingling feeling. When seen by **Hilbert** (Sensburg) in the later part of the same day, the skin of the hands and the face was intensely red and swollen. The redness and swelling of the eyelids were accompanied by a watery mucous discharge, lacrymation, photophobia, and blepharospasm. The eyes could not be completely opened. The cornea and the iris were unaffected. Lanolin to the skin and cold compresses to the eyes brought recovery in five days, followed by slight desquamation. The patient acknowledged having pressed his face into the herbs while inhaling the aromatic fragrance. Rubbing one of his fingers with fresh leaves, again produced the redness, and, after ceasing, the finger continued to swell. That this is the first case of the kind reported indicates its great rarity and a special idiosyncrasy on the part of the patient. The effect is probably due to an ethereal oil contained in the plant.

W. B. INGLIS POILLOCK.

(4) **Trousseau**, of Paris, describes three cases of severe conjunctivitis following removal of the lacrymal gland, one of which had been previously shewn by himself at the *Société d'Ophthalmologie de Paris* on February 2nd, 1901, and,

he states that he has seen several slight ones. The conjunctivitis came on 15 or 20 days after the operations, was very chronic, resisted all the usual treatments, local and general, and seemed aggravated by antiseptics and astringents. Bacteriological examinations, made in two of the cases, did not throw any light on the ætiology, while in one case there was excessive lachrymation, the tears being chemically normal. The author is at a loss for a satisfactory explanation of the occurrence of these cases. He considers that infection and absence of the bactericidal influence of the tears are excluded, but suggests that they may be due to injury to the nerves during operation, or to complete removal of the gland, part of which, he suggests, may have been left behind in cases in which no conjunctivitis develops.

R. J. COULTER.

(5) **Cosmettatos**, of Athens, describes a case of conjunctivitis which he attributes to an insect bite.

The case presented the following features:—

The patient, a shoe-black, aged twenty, accustomed to sleep on the floor, woke up one morning to find his left eye very much inflamed. On examination at the hospital, the lids of the left eye were found swollen, red, and sensitive to touch, and there was a slight sero-purulent discharge. The conjunctiva of the upper lid was strewn with a number of large, soft, red vegetations, varying in size from a lentil to a pea. There were no yellow granulations. The conjunctiva of the lower lid was healthy. The left parotid region was swollen, but the skin was not reddened. The left pre-auricular gland was about the size of a small almond, and the sub-maxillary glands of the same side were also swollen. The patient did not remember having come in contact with anybody with inflamed eyes. The eyes of the other members of the family were healthy. The author removed the vegetations and treated the case with antiseptic lotions. In the course of a fortnight everything had returned to normal. *Microscopic examination*.—The epithelium was almost absent, and its place taken by a leucocyte infiltration. The vegetations consisted chiefly of lymphoid tissue containing a large number of lymphocytes, most of which were of normal size and shape, but some of the mononuclear variety were double the usual size, and measured about  $12\mu$ . Plasma cells were also found. In some of the slides large phagocytic cells were observed, which resembled those described by Villard and Pick. They measured about  $80\mu$ , and contained a large number of nuclei, besides leucocytes and other cellular bodies. The author thinks that these cells were derived from the large mono-nuclear lymphocytes mentioned above. A bacteriological examination revealed nothing beyond the bacteria usually found in the conjunctiva, and none of these predominated. The case resembles one described by Phoeas and Livanthinos. The author regards it as allied to Parinaud's conjunctivitis, although not the same. There were none of the semi-translucent or opaque granulations peculiar to Parinaud's disease. PERCIVAL J. HAY.

(6) **Gabriélidès**, of Constantinople, reports a case of inflammation of the conjunctiva set up by the inspersion of juice from the squirting cucumber\* (*Eclabium elaterium*). Symptoms were mild. The conjunctival secretion contained 97 per cent. polynuclears and 3 per cent. lymphocytes. Mononuclears and eosinophiles were conspicuous by their absence. Bacteriological examination of the secretion was negative. SYDNEY STEPHENSON.

(7) The case reported by **Cartil** (Lyon) was one in which a mild diphtheria, localised to the conjunctiva, was acquired by direct infection from a virulent laryngeal case. Löffler's bacillus existed in pure culture in the conjunctival false

\*For mention of a case where symptoms followed a similar accident, see THE OPHTHALMOSCOPE, December, 1909, p. 870.

membrane, which latter was of small dimensions. In two or three days the eye was well, but the organism persisted in the conjunctiva for two months. The author concludes that the conjunctiva, like the other mucous membranes, is a possible carrier of infection, capable of starting an epidemic, and that patients who have had even a mild attack of diphtheritic conjunctivitis should be subject to the same therapeutic and prophylactic rules as are applicable to the affection in an acute state.

ERNEST THOMSON.

## XII.—TRACHOMA BODIES.

- (1) Wolfrum, M.—Trachoma findings in smears and sections. (Trachombefunde im Ausstrich und Schnitt.) *Klin. Monatsbl. f. Augenheilkunde*, Oktober, 1909.
- (2) Pusey, Brown.—“Trachoma Bodies” possibly the ætiologic factor of trachoma. *Journ. Ophthalmology and Oto-Laryngology*, November, 1909.

(1) Wolfrum, of Leipzig, confirms the presence of Halberstädter-Prowazek bodies in the epithelium of the trachomatous conjunctiva. He found them not only in scrapings, but also in sections of the upper fornix, after the specimen had been fixed in sublimate-formol. In the author's opinion, the absence of the bodies from the sub-epithelial tissue does not militate against their ætiological importance.

C. MARKUS.

(2) This communication, now reprinted from the *Quarterly Bulletin of North-Western University Medical School* of June, 1909, was abstracted in THE OPHTHALMOSCOPE of September, 1909, page 633.

## XIII.—PARALYSIS OF CERVICAL SYMPATHETIC AND BRACHIAL NEURITIS.

Fuchs, Ernst.—Paralysis of the cervical sympathetic in the course of a brachial neuritis. (Paralysie du nerf sympathique cervical au cours d'une névrite du plexus brachial.) *L'Ophthalmologie Provinciale*, mars, 1909.

Fuchs, of Vienna, refers to the group of symptoms known as the “syndrome of Horner” which occurs in the course of paralysis of the cervical sympathetic, namely, lid-droop, contraction of the pupil, slight exophthalmos, pallor and reduced temperature of the skin of the face on the affected side, with absence or diminution of sweat, and notes that although there are many causes of this, one but little-known or written about is an attack of acute brachial neuritis. He mentions two cases in which the conditions were associated, the first in which he himself was the patient; that, two days after the onset of an attack of acute brachial neuritis on the right side, a colleague, who came to see him, noted that his right pupil was contracted, although no lid-droop or other symptoms were present; the pupils became equal again several days later, but the neuritic pains did not disappear for 6 to 8 weeks.

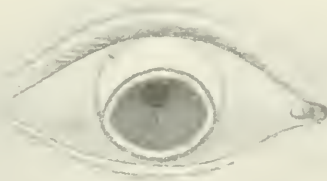
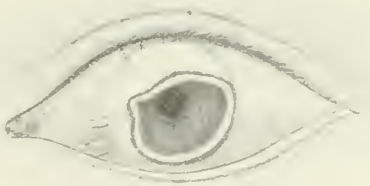
Fuchs did not know the cause of his neuritis, but trusted that his readers would believe him when he said that it was not of alcoholic origin. The second case occurred in a woman of 44, who showed slight ptosis and myosis on the affected side, with nystagmus on extreme lateral movements.

Fuchs considers that the coincidence of paralysis of the cervical sympathetic with acute brachial neuritis can be explained on anatomical grounds, that the sympathetic fibres become affected in the part of their course from the spinal cord which is common to them and to the roots of the brachial plexus, *i.e.*, in the 6th, 7th, and 8th inter-vertebral foramina. BERNARD CRIDLAND.

#### XIV.—PERIPHERAL ECTASIA OF THE CORNEA.

Komoto, J. — Contribution to the clinical appearance and differential diagnosis of peripheral ectasia of the cornea. (*Zur Kasuistik und Differential-diagnose der peripheren Rinnenbildung der Hornhaut.*) *Klin. Monatsbl. f. Augenheilkunde*, Oktober, 1909.

Komoto's case of peripheral ectasia of the cornea exhibited all the characteristic features of this condition (*vide* abstracts in THE OPHTHALMOS-



COPE, 1907, pp. 260 and 660), and is interesting chiefly as being the first to be reported from Japan. As usual, the patient was old (60 years), and the marginal bulging of the cornea gave rise to considerable astigmatism, and



was associated with a well-marked gerontoxon. There was no history of inflammation of the eye.

Komoto reports also an instance of corneal change somewhat similar in appearance to peripheral ectasia, yet different in nature. It consists in an encroachment on both corneæ by the limbus conjunctivæ, with an arcus senilis inside the limbus (see illustrations, also the report of E. Treacher Collins in the *Transactions Ophthalmological Society*, 1909, p. 225). Blood vessels extend from the conjunctiva into the opaque, sclera-like area. The arcus senilis is ring-shaped and separated from both the opacity and the natural limbus by a zone of clear cornea. The condition may be explained as the combination of a congenital anomaly (embryontoxon) with arcus senilis. C. MARKUS.

## XV.—SYNCHYSIS SCINTILLANS.

- (1) Dor, Henri.—The frequency of synchysis scintillans. (La fréquence du synchysis scintillant.) *L'Ophthalmologie Provinciale*, T. V, p. 101, juillet, 1908.
- (2) Sommer, G.—Synchysis scintillans. *Wochenschrift f. Ther. u. Hygiène des Auges*, Juli 15, 1909.
- (3) Wiegmann, E.—On synchysis scintillans. *Wochenschrift f. Ther. u. Hygiène des Auges*, August 12, 1909.
- (4) Oppenheimer.—A Contribution to the question of synchysis scintillans. *Wochenschrift f. Ther. u. Hygiène des Auges*, August 19, 1909.
- (5) Sommer, G.—Once again : On synchysis scintillans. *Wochenschrift f. Ther. u. Hygiène des Auges*, August 26, 1909.

(1) H. Dor, of Lyons, finds that among 82,732 patients he has seen only 32 cases of synchysis scintillans, and he therefore considers that de Wecker overestimated the frequency of the condition. He gives short notes of 24 of his cases, and also of three cases in which cholesterin crystals were present in the lens, and of one case in which they were deposited on Descemet's membrane. From his study he concludes that synchysis scintillans may occur as a result of deep-seated diseases of the eye, such as old irido-choroiditis, detachment of the retina followed by trophic troubles, iridocyclitis or cataract, in all which cases it is monocular, but that less frequently it is due to general disease (e.g., of the liver), when it is binocular, and in spite of the presence of enormous quantities of glistening bodies, the vision is relatively very satisfactory.

R. J. COULTER.

(2) Sommer, of Zittau, examined with Oppenheimer a case of synchysis scintillans in which the crystals presented a glittering silvery appearance. He states that their experience was different from that of Fuchs and other writers who have described in text-books the "shower of gold" found after movements of the eyes.

W. B. INGLIS POLLOCK.

(3) Wiegmann, of Hildesheim, in reply to the above paper quotes from Krückmann (in Axenfeld's text-book) in support of his statement that these crystals have much oftener a golden than a silvery appearance. The colour depends partly on the chemical composition of the crystals, the majority of which are fat substances, cholesterin, tyrosin, leucin, margaric, or phosphates. Occasionally calcareous particles are found, and it is probable that they were the bases of the snow-white flakes without sparkle which he discovered in

both eyes of a man of 57 years with arteriosclerosis, one of whose eyes had numerous retinal hæmorrhages, while the other was normal. Transition forms are to be expected. The colour depends also upon the source of light. Oil gives a reddish-yellow, while a whiter appearance is to be expected from the incandescent gas mantle or electric light. W. B. INGLIS POLLOCK.

(4) **Oppenheimer**, of Berlin, states he has seen six cases of synchysis scintillans in the course of ten years and only one had the golden sparkling, while the others were silvery. He found one solitary author—Fox (*Text-book*)—who agrees with him that the latter particles are the rule and the golden the exception. Hill Griffith (Norris and Oliver's *System of Diseases of the Eye*) said in 1898 that "in many of the cases which I have seen the opacities took the form of white, glistening, round discs." W. B. INGLIS POLLOCK.

(5) **Sommer**, of Zittau, in replying to Wiegmann, states that the influence of source of illumination is not of much importance. He has seen the silver crystals when he employed ordinary gas. W. B. INGLIS POLLOCK.

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## XVI.—GLAUCOMA.

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- (1) **Beauvois**.—A case of traumatic glaucoma. (Un cas de glaucome traumatique: considérations cliniques et pathogéniques.) *Recueil d'Ophthalmologie*, décembre, 1908.
- (2) **Fage**.—Spontaneous rupture of the cornea in a man with glaucoma. (Rupture spontanée de la cornée chez un glaucomateux.) *L'Ophthalmologie Provinciale*, février, 1909.
- (3) **Wibo**.—A case of glaucoma with spontaneous rupture of the eyeball. (Sur un cas de glaucome avec rupture spontanée du globe oculaire.) *La Presse Médicale Belge*, 28 février, 1909.
- (4) **Rönne, H.**—On the shape of the nasal defects of the visual field in glaucoma. (Ueber die Form der nasalen Gesichtsfelddefekte bei Glaucom.) von Graefe's *Archiv f. Ophthalmologie*, Bd. LXXI, Heft 1, Juli 6, 1909.
- (5) **Kümmell, R.**—Researches upon glaucoma hæmorrhagicum. von Graefe's *Archiv f. Ophthalmologie*, Bd. LXXII, Heft 1, Oktober 5, 1909.

(1) This case by **Beauvois**, of Neuilly-sur-Seine, illustrates the necessity for caution in the prognosis of certain injuries of the eye and the necessity for frequent examination of the fundus in cases of contusion of the globe. A man, 33 years of age, whilst bending his head suddenly, caught his right eye against a piece of iron. He felt giddy for a few minutes, and the eye was painful for a time, but he was able to finish his day's work. At night, however, he developed ocular and periorbital pains, and next morning there was some blurring of sight. Twenty-four hours after the accident, there was no sign of injury to the cornea, but there was slight conjunctival and ciliary injection, while the iris was contracted and a little blurred. Fundus and tension normal. A few days later, it was found that there was a slight rupture of the iris peripherally and a little choroiditis at the lower periphery. Under treatment by atropine, hot fomentations, and dark glasses, ciliary injection and pain subsided in a couple of days. Two days later, the pains returned, and although the eye appeared quiet, the vision never returned to normal, and ophthalmoscopic

examination now showed some cupping of the disc, while the tension was a little above normal. Atropine drops were changed for eserine, but the pains and increased tension persisted and the papillary excavation extended, along with diminution of visual acuity and field.

A week after the accident: V. =  $\frac{1}{10}$  T. + 1. Field retracted infero-internally. Marked cupping of the disc, with sharp bending of the vessels. Pains considerably less. A week later still, a large iridectomy was performed, but it did not stay the progress of the disease, and six weeks after the injury, vision was reduced to counting fingers at 1 metre and the disc was completely cupped and atrophied. The Court Referee decided that, for occupational purposes, the eye was permanently lost, and estimated the diminution of wage-earning capacity at 30 per cent.

The case is striking and instructive from the following points of view: the appearance of symptoms of glaucoma with cupping of the disc five days after a blow on the eye (it is true atropine drops had been instilled once or twice daily during this time): the mildness of the inflammatory symptoms: the rapidity with which the cupping of the disc became complete: the failure of myotic and surgical treatment to stem the progress of the disease.

J. JAMESON EVANS.

(2) **Fage**, of Amiens, reports a spontaneous rupture of the cornea having occurred in a carman who presented himself at his clinic at the St. Victor Hospital, Amiens.

The patient, who was alcoholic and atheromatous, came first on account of an acute exacerbation in the left eye, already the subject of absolute glaucoma; relieved by suitable treatment, he did not return until forced to do so some two months and a half later, when the cornea was found to be ruptured. The perforation was horizontally oblong, about 3 mm. in length, and situated centrally; the lips were slightly infiltrated and kept apart by a hæmorrhage of moderate size, which filled the anterior chamber. No prolapse of internal structures. Several fine greyish exudates could be seen at the bottom of the anterior chamber. At the first visit the cornea had been noted to be intact. Enucleation was performed on account of subsequent infection.

Fage comments on the rarity of the occurrence, having been unable to find more than five cases reported in the past five years, with the exception of the recent work by Coppez (*vide* THE OPHTHALMOSCOPE, p. 279, 1909).

A short *résumé* of the cases is given, and the writer then refers to the division of opinion as to whether a spontaneous hæmorrhage is the immediate precursor of a corneal rupture, or whether the rupture taking place first, gives rise to a hæmorrhage by a sudden disturbance of the intraocular equilibrium. He appears to incline to the former view, and points out that being supported behind by the capsule of Tenon, and laterally by the bands of the recti muscles, the globe allows itself to yield in front, and may easily be ruptured by a wave of expulsive hæmorrhage. Other factors which come in and contribute are.—Thinning of the cornea from senile changes, faulty local nutrition, prolonged distension, and trophic ulceration; also friability of the choroidal and retinal vessels, and increase of arterial tension. With regard to the last-mentioned, Fage points out that glaucomatous subjects very often have increased arterial tension, and (quoting Terson and Campos) that it is especially so in the subacute forms of glaucoma. These two authors found that in 8 out of 15 cases of glaucoma tension varied from 24 to 26, measured by the sphygmomanometer of Potain (normal varying from 15 to 17).

It may be gathered from the article that the writer considers that in glaucomatous subjects the factors likely to produce a choroidal hæmorrhage are more numerous than those which would be likely to lead to a corneal

rupture *per se*, and that therefore hæmorrhage is probably the precursor in cases of corneal rupture in glaucoma.

BERNARD CRIDLAND.

(3) **Wibo**, of Brussels, reports the case of an elderly woman, who was affected with absolute glaucoma, with violent exacerbations. Surgical treatment was refused; and for a time considerable improvement was brought about by myotics applied to the eyes and leeches to the temples. But some time after, following a slight effort, the eyeball was ruptured, and in the midst of a profuse hæmorrhage, the globe became emptied of its contents and of its internal membranes through a horizontal tear of the cornea. Moreover, the edges of the cornea were ulcerated and infiltrated with pus, and a fine track of purulent matter started from the wound to lose itself in the depths of the eyeball. The rupture, then, was complicated with panophthalmitis. Exenteration of the eyeball was practised at once. The author considers the two hypotheses which explain rupture of the globe in glaucoma. In one of these, rupture of the cornea determines expulsion and provokes profuse hæmorrhage. In the other, expulsion occurs by the pressure of blood accumulated in the supra-choroidal spaces. Wibo supports the theory last named.

MARCEL DANIS.

(4) The defects of the visual field in glaucoma, especially if the cases are not too far advanced, are marked by localisation corresponding to the course of a special nerve bundle. The fibres mostly affected are the ones which run towards the macula and which in contrast to the nasal fibres, which take a radial course, diverge and form an arc round the upper and lower border of the macula and then unite on its outer side, forming here a kind of “*raphé*” strictly in the horizontal meridian. It was to be expected that any injury affecting one of these divisions—upper or lower respectively—must show a sharp line of demarcation along the horizontal meridian of the visual field. **Rönne**, of Copenhagen, shows in a perfectly convincing way that this is indeed the case. The nasal defect in the field shows a sharp, well-defined “step-” like boundary, the base of which follows the horizontal meridian closely. It is by no means necessary to use for this purpose the more elaborate methods of Rönne’s teacher, Bjerrum. On the contrary, the ordinary perimeter is preferable, and that this peculiarity of the fields has not been more often recorded is due only to the reprehensible way in which the fields are, as a rule, traced by merely noting a few radial diameters instead of moving the test-object freely along the whole field. It must be remembered, however, that the “nasal step” is not pathognomonic of glaucoma, but can be produced by other causes as well, if they affect a nerve bundle on the optic disc.

R. GRUBER.

(5) Though cases of glaucoma hæmorrhagicum form a fairly well-defined subsection of the whole class of glaucoma, there is some difference of opinion as to the relative importance of actual hæmorrhage in its causation. Whereas some authors reserve the name only for cases wherein the onset of glaucoma is preceded by retinal hæmorrhage for a longer or shorter period, Haab and others apply the term to every glaucoma, when accompanied by spontaneous hæmorrhage. Cases of this class are in so far a favourable field for pathological research as they are liable to lead comparatively soon to excision, and thus offer an opportunity for observing the early symptoms of glaucoma. **Kümmell**, of Erlangen, has fully availed himself of this opportunity in his interesting and detailed communication. Of course, the vascular changes come in for the greatest share, and though these changes are not intrinsically different from those seen in other forms of glaucoma, they are more marked and of greater intensity. Kümmell very properly insists on the great importance of carefully looking for changes in the ciliary vessels,



which are often intensively affected, especially in their extrascleral portion. The anatomical changes, of which a very detailed description is given, are not very different from the pictures of Harms in his important paper. The vascular changes lead to œdema of the posterior portion of the eyeball, in which Kummell sees the direct cause of glaucoma. He points to the frequent combination of glaucoma with diseases of the heart, albuminuria, apoplectic affections, etc., as might be expected in elderly people with arteriosclerosis. As a matter of fact, out of 113 cases there were only 17 without general trouble. The prognosis as regards the affected eye is, of course, extremely unfavourable. The other eye becomes affected in at least 20 per cent. of the cases, and the prognosis *quoad vitam* is also unfavourable.

R. GRUBER.

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## XVII.—CLIMATE AND OCULAR AFFECTIONS IN EGYPT.

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Meyerhof.—On the relations between the climate and some ocular affections in Egypt. (*Des rapports du climat avec quelques affections oculaires en Egypte.*) *Ann. d'Oculistique*, T. CXL, p. 247, avril, 1909.

Meyerhof (Cairo) wishes his article to be considered as a preliminary communication intended to determine a little more exactly than has previously been done the influence of the seasons and climate upon a certain number of ocular affections in Egypt. The following is a *résumé* of his conclusions:—

The number of cases of acute conjunctivitis, taken as a whole, begins to increase in April and reaches a first maximum in June. It then diminishes slightly until August, when it again increases, and reaches a second maximum in October, after which it gradually decreases until December. With regard to its sub-divisions:—

1. Koch-Weeks' conjunctivitis is the commonest form. It is prevalent from April to December. During this period the number of cases increases gradually until June, after which it diminishes until August, and then rises to a second maximum in October, after which it gradually decreases. The great majority of the cases occur in children, and are most severe at the same periods that they are most numerous. The disease recrudesces every year after the first heats, and disappears when the temperature becomes definitely lowered. No connection can be traced between the prevalence of this form of conjunctivitis and the humidity of the atmosphere or the rise of the Nile, and the part played by flies in spreading the affection, although generally admitted, is not definitely proved.

2. Gonococcal conjunctivitis is very common. It occurs chiefly in the children of the poorer class, but is very rare in the form of ophthalmia neonatorum. In winter the cases are sporadic, but during the spring they increase gradually in number, become epidemic about June 15, reach a maximum in October, and then gradually decline. The fact that children of the better classes are almost exempt from this form of conjunctivitis, while they suffer from the Koch-Weeks' form as much as those of the poor, would seem to show that the infection is not caused by flies.

3. Morax-Axenfeld conjunctivitis is seen chiefly in a chronic or sub-acute form as a complication of trachoma, and occurs with the same frequency at all times of the year.

The form of chronic conjunctivitis most frequently seen is trachoma. Its pandemic character seems to be due more to the dirty habits of the people

than to any climatic influence, but fresh infections and acute exacerbations, without any secondary infection, are twice as common in summer as in winter.

Follicular conjunctivitis among Europeans occurs with equal frequency at all seasons. Among the natives it is almost impossible to diagnose its presence, owing to the prevalence of trachoma. In all the above conjunctival affections the predominating climatic influences seem to be the heat, the dryness of the air, and the absence of rain in summer.

Ocular diphtheria is as rare in Egypt as in Europe. The cases seen by the author occurred in September and October.

Pneumococcic and tuberculous affections of the eyes and lymphatic conjunctivitis are rare, probably owing to the climate. Syphilitic disease of the eye, especially iritis, is rare, but when present, is of serious import. As Europeans do not seem to share this indemnity, it is probably due to race not to climate.

Rheumatic and arthritic affections of the eyes are not unknown in Egypt, but very chronic cases are rarer than in Europe. The author is not able to state definitely whether the practice of European oculists who send patients with chronic iritis or scleritis to Egypt in the hope that the climate will affect a cure is justified, but he has met with a number of such patients who were very satisfied with the result of a single winter spent in higher Egypt.

Spring catarrh is well-known in Egypt, and the author has noticed that the inconvenience caused by the heat commences about the same time as in Europe, *i.e.*, in March.

Pterygium is very common, as is glaucoma, which occurs in the chronic inflammatory form influenced by the seasons.

Cataract is less common in Egypt than in Europe, but myopia and its consequences, choroiditis and detachment of the retina, are very prevalent from racial not climatic causes.

Albuminuric neuritis and retinitis occur in natives and are seen in patients sent to Egypt for the cure of their renal disease. The prognosis in these cases both for vision and for life seems to be much better in Egypt than in Europe.

R. J. COULTER.

## XVIII.—THE OCULAR COMPLICATIONS OF MUMPS.

**Chevalier.** — A case of optic neuritis following mumps, and a contribution to the study of the ocular complications of mumps.

(Observation de névrite consécutive aux oreillons et contribution à l'étude des complications oculaires des oreillons.) *L'Ophthalmologie Provinciale*, janvier, 1909.

**Chevalier**, of Le Mans, reports a case of mumps in which optic atrophy of the post-neuritic type followed in each eye. The patient was a robust railway *employé* of 47, who had always led a temperate life, and had never had syphilis; the attack of mumps was severe and accompanied by double orchitis. Convalescence was long, and for some time there was weakness of the lower limbs, with headaches and sickness. Within two or three weeks of the onset some dimness of vision was noted which steadily increased, and when seen for the first time by Chevalier, some two years after the attack, both optic nerves showed marked white atrophy, the right vision being  $\frac{1}{50}$ , the left a little better.

The writer, remarking on the small number of similar cases recorded\*, refers to those of Talon, Blanchard, le Roux, and Dor, and passes on to note other, but more benign, complications and sequelæ which may occur in connection with this disease, particularly bilateral dacryo-adenitis, conjunctivitis without secretion, keratitis, and iritis.

In conclusion, Chevalier is of the opinion that the neuritis (and subsequent atrophy) is the result of the direct action of toxins upon the nerves.

BERNARD CRIDLAND.

## XIX.—STRABISMUS.

- (1) **Bradburne, A. A.**—The management of squint. *The Clinical Journal*, October 28th, 1908.
- (2) **Bradburne, A. A.**—The restoration of vision in the squinting eye. *British Medical Journal*, Jan. 2nd, 1909.
- (3) **Bradburne, A. A.**—Amblyopia exanopsia, its nature and treatment. *Ophthalmology*, Vol. V, July, 1909.
- (4) **Bradburne, A. A.**—The restoration of vision in strabismus. *Ophthalmology*, Vol. V, July, 1909.

(1) **Bradburne's** lecture before the Medical Societies of Southport and of Chester is an able and transparently clear statement of modern views on the subject of strabismus and its treatment. It deals specially with the early management of concomitant squint in children under six years by Worth's method, and gives all due honour to the latter ophthalmologist. It strikes the reviewer as one of the most straight-forward and easily understood expositions of the subject which he has ever had the pleasure of reading.

ERNEST THOMSON.

(2) After some remarks on the modern treatment of squint, **Bradburne** expresses sanguine views as to the restoration of function in amblyopic eyes of patients who have passed the recognised six year limit. He admits that up to the present his efforts in this direction have, in general, not produced any great result; yet to the rule there are exceptions, and he details the case of a boy of 11 years in whom vision improved under training from  $\frac{5}{60}$  to  $\frac{5}{9}$  and J 1. The patient was a very suitable subject for training, in that he was mentally bright, the refraction error was low, without great difference in the two eyes, and his parents appreciated the surgeon's efforts. Still, as such a case is rather remarkable it may be quoted in full:

"A youth, aged 11 years, began when about 2 years of age to squint with the right eye, which turned in. Teething was supposed to be the cause. There was no history of any relation having squinted. He was seen by an ophthalmic surgeon at 4 years of age, was given in the right eye  $+5$  D. sph. and in the left  $+1$  D. sph. Apparently no attempt was made to test him as to the presence of the fusion sense. He wore the glasses constantly, and was told that the case was proceeding so satisfactorily that in a few years' time he would be able to do without them. The patient was an exceptionally brilliant boy, and at school had taken all his class prizes and had not missed a single day's attendance.

He was brought to me in November, 1907. His right eye turned in about  $8^\circ$ , fixation was possible but slow; the left eye was used in both near and far vision. He was wearing the glasses mentioned, and with them the vision in the left eye was  $\frac{5}{9}$ , whilst in the right it was only  $\frac{5}{60}$  with or without glasses. Tests with the amblyoscope showed there was deficient perception to pictures in the right eye; but after half an hour's graduation of the illumination recognition of both pictures was obtained, and this was quickly followed by blending.

\*For cases by van Duyse see THE OPHTHALMOSCOPE, July, 1908, p. 513.

When seen on December 11th the vision in the right eye was two letters of  $\frac{5}{32}$ , and with the amblyoscope true fusion was elicited. In place of the amblyoscopic pictures a set of typeprinted letters on transparent sheets of celluloid was inserted. These sheets of printed letters contained two-sized type, the larger being equal to letters readable at 9 feet, and the smaller equal to Jaeger No. 4.; these sizes alternated with each other. It was found he could slowly make out the larger letters, but skipped the intervening smaller ones. He was instructed to cover his left eye with his hand when doing his lessons and endeavour to teach his blind eye its letters. At the same time his parents—who most ably co-operated in my endeavours—at my suggestion bought him an alphabet set of letters on pieces of card, with which he built up words with his left eye and then endeavoured to interpret them with the right eye.

“December 19th. Fusion exercises of both pictures and type were carried out, and it was found that as the tube in front of the right eye was moved in the direction which brought the letters over the outer portion of the retina they became suppressed; by therefore adjusting the tube this portion of the retina was exercised.

“December 24th. On this date the vision in the right eye had improved to  $\frac{5}{18}$ , and the ability to take up and maintain fixation was greatly improved.

“He was seen once a week, and at each visit exercises were carried out with the pictures and the letters, and by degrees the ability to maintain fusion was cultivated, until he could read type equal to J. 8 and J. 4. For nearly two months very little progress beyond this stage was obtained, and during the time atropine had been used in the fixing eye—the left; this was supplemented by a total exclusion pad, whilst at the same time he did all his school work with the right eye.

“March 20th. Vision in the right eye equal  $\frac{5}{11}$  without glasses, and  $\frac{5}{16}$  partly with the glasses, but by the end of April he got four letters of  $\frac{5}{8}$  vision. During the last six weeks of this period exercises with a 6° prism, base down, had been instituted, and after painstaking efforts we obtained double vision, this being aided by dark glasses at first in front of the left eye.

At the beginning of May the vision in the right eye had risen to four letters of  $\frac{5}{8}$  and the shade was removed from the right eye. The removal of the shade, it was feared, would cause the left eye to take up the work of seeing again, but instead the vision of the right eye continued to improve, and when seen last the patient read without his glasses  $\frac{5}{8}$  and Jaeger I.

“The convergence of the right eye is now all that remains to be removed, and when this is done the condition will be such that he can put his glasses on one side and the vision in both eyes will be equal, his ability to read or write normal, his fusion sense fully developed; in fact, a complete cure will have been accomplished.”

ERNEST THOMSON.

(3) In amblyopia exanopsia the defect consists in an inability to recognise letters and figures of a certain size as such. There is no contraction of the visual field and no central scotoma. When the field is tested with letters of different sizes, the smaller letters are seen over the same area as the larger ones, but are recognised as markings only. If the patient be asked to name the letter used in the test “a ready but mistaken answer is given no matter how small the test letter” and this reminds one of the behaviour of children who are in the process of learning the letters. For these reasons Bradburne comes to the conclusion that the defect is a cerebral one, and that it has its seat in the higher visual centre (visuo-psychic). The defect is not one of perception but of interpretation. Treatment must therefore be based on methods which are educative. These methods are:—exclusion of the better eye, training of the defective eye with the amblyoscope, and the use of an apparatus which the author has devised for the purpose. In it the patient looks at a printed card through prisms which produce a vertical separation of the two images. The letters are alternately large and small. When the good eye is covered the defective eye may read the larger letters, skipping or stuttering over the smaller ones. His mistakes are corrected by temporarily uncovering the good eye. The series of cards comprises all sizes of reading type down to the smallest, and the instrument may be used by the patient for home-treatment, and by the surgeon for estimating the progress made.

A. J. BALLANTYNE.

(4) Worth has shown that a defect of the “fusion faculty” plays an important part in the development of squint, and devised the amblyoscope for training the defective faculty. The visual power acquired by this training is designated by Bradburne, “landscape vision,” and he asserts that further training is required to enable the defective eye to recognise letters and figures, and thus, to play its proper part in the visual act. This training, he claims, can be readily



given by means of his apparatus, in which a vertical separation of the two images is obtained by means of prisms, the test objects being cards of type. Although it is usually stated that restoration of the fusion faculty is impossible after the age of six years, the author thinks it probable that appropriate and persevering training will produce the desired result in many cases beyond that age. He quotes in support of this view the following case:—

Boy, aged 11, with convergent squint and very defective central fixation in the squinting eye. The squint had been present since the age of two. Glasses had been worn since age of four, but the best vision in the squinting eye was  $\frac{5}{50}$ . The amblyoscope was first employed until blending of the two pictures could be produced. Type cards were then substituted for the amblyoscope pictures, and after about six months training by such methods aided by atropinisation and occlusion of the good eye, vision in the squinting eye was restored to  $\frac{5}{6}$  and Jaeger 1. After operation the patient had no squint, was able to dispense with his glasses, had fully cultivated fusion faculty, stereoscopic vision, and normal use of the eyes for reading and writing.

The author's stereoscope for training in such cases is described and illustrated

A. J. BALLANTYNE.

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## XX.—THE SURGICAL TREATMENT OF STRABISMUS.

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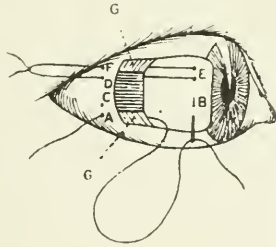
- (1) Callan, P. A.—Strabismus from the operative standpoint. *Trans. Amer. Ophthal. Society*, Vol. XI, Part III, 1908, p. 665.
- (2) Brooksbank-James, G.—On the operative treatment of strabismus. *Trans. Ophthal. Society U.K.*, Vol. XXIX, Part 2, 1909, p. 89.
- (3) Bettremieux.—Treatment of strabismus by operating on the fixing eye. (*Traitement du strabisme suivant la tactique consistant à opérer l'œil qui ne louch pas.*) *Ann. d'Oculistique*, juillet, 1909.
- (4) Sommer, G.—On the history of strabismus operations. *Woch. f. Ther. u. Hygiene des Auges*, August 5, 1909.
- (5) Ferri, L.—The ætiological principles and surgical treatment of strabismus: the pseudo-tendinous elongation of the muscles. *Annali di Ottalmologia*, Vol. XXXVIII (1909), fasc. 5.
- (6) Hansell, Howard, F.—The surgical treatment of strabismus. *Ophthalmology*, October, 1909.

(1) Ophthalmic surgeons are by no means agreed either as to the method or the moment of operating for strabismus. Callan, of New York City, believes that surgical treatment, as a rule, is delayed too long after glasses and orthoptic measures have failed to cure the deformity. After all, parents bring their squinting children to have the eyes put straight, and usually know little and care less about binocular vision. Tenotomy should not be performed, especially during the period of growth, since the ultimate results are not seldom unsatisfactory. An operation, however, should be undertaken if glasses, etc., yield no result after six months' trial. Resection (the operation favoured by Callan) has been advocated by Guérin, Noyes, Dresser, Müller, Schweiger, and Reese, among other surgeons, and in the present communication the writer describes the operation as he performs it. Details follow.—A

vertical incision, 20mm. long, having the tendon of the muscle to be resected as its centre, is made through the conjunctiva, 8mm. from the cornea. The muscle is then freed to the full extent of the resection. The tendon is raised by means of a couple of strabismus hooks, and one of the two needles attached to a suture is pushed under and through the lower third of the muscle and conjunctiva beyond the second hook. The second needle is then passed through the upper third of the muscle, including the conjunctiva. Two smaller sutures may be used, each with a fine needle, one above and below, including conjunctiva and muscle back of the chief suture. The muscle can now be cut 2mm. anterior to the posterior suture, and the tendon is next cut off, leaving about 1mm. of stump. Each of the two needles is then passed through episcleral tissue under the stump of the tendon and the conjunctiva. The single sutures are passed through the episcleral tissue and conjunctiva 5mm. above and 5mm. below the other sutures. The parts are drawn together and the sutures tied.

SYDNEY STEPHENSON.

(2) Aside from the recital of cases and some more or less general considerations on squint, **Brooksbank-James**, of London, describes his operation of advancement. His point is that the sutures must be passed through the superficial fibres of the sclera, exposed for the purpose, else they are almost certain to tear through soon after their insertion. Details follow: a vertical fold of conjunctiva, including Tenon's capsule, is removed at a distance of 4 mm. from the edge of the cornea, and the structures named are dissected from the sclera to the corneal margin, the sclera being cleanly



exposed in the course of the proceeding. The clamp-forceps are then closed on the end of the tendon, the conjunctiva being excluded. In the next step the tendon is divided close to the sclera, and the conjunctiva is carefully dissected from its outer surface and allowed to retract, so as to expose the lateral expansions of the muscle. A short, straight needle (specially made for the purpose), threaded with No. 0 white silk, is passed through the retracted conjunctiva, close to the free edge of the latter, and the lower lateral expansion of the muscle (A in the figure). It is carried forwards, and passed vertically through the superficial fibres of the sclera (B in the figure). The needle is now carried backwards parallel to its original course, and made to emerge through muscle capsule and conjunctiva at a point (C in figure) situated about 2·5 mm. above the point where it entered. A second suture (see figure) is passed in a similar way through the upper margin of the muscle. At this stage of the operation four sutures hang from the side of the eyeball. An assistant now holds the globe in the middle line by means of forceps, and at the same time draws the muscle to be advanced forwards by the clamp-forceps, so that the muscle lies flat against the sclera. The surgeon then ties the sutures as shown in the figure. The forceps are next removed from the

muscle, and a variable portion of its tendinous extremity in front of the sutures is cut off obliquely, so as to leave a raw surface in contact with the sclera. In some cases the author has removed as much as 6 mm. or even more. The last step is to close the wound in the conjunctiva with a fine continuous stitch, which is not tied, and the free extremities of which are carried underneath the conjunctiva away from the corneal margin. Brooksbank-James points out that a slight modification in *technique* is occasionally necessary when operating on the internal recti in high divergence, since there is some difficulty in manipulating a straight needle in the confined space towards the inner canthus. Thus, the scleral suture may first be inserted, and its extremities be carried underneath the muscle and other structures by means of curved needles. Finally, it should be added that the "*dosage*" of the operation described by Brooksbank-James must be regulated chiefly by the experience of the surgeon and his knowledge of the angle of the squint.

SYDNEY STEPHENSON.

(3) **Bettremieux**, of Roubaix, writes in reply to criticisms of his plan of performing tenotomy on the fixing eye in cases in which optical and medical means have been unsuccessfully tried. He urges that if it is logical to do a tenotomy on the fixing eye in cases in which a similar operation has been performed on the deviating eye without producing sufficient effect, it is equally logical to commence by performing tenotomy on the fixing eye, and states that, in his experience, the latter procedure is harmless and effective.

R. J. COULTER.

(4) From J. F. Dieffenbach's *Schieln und die Heilung desselben durch Operationen* <sup>(1)</sup> **Sommer** gives a series of most interesting extracts, accompanied by a running commentary. L. Stromeyer was the first (it is here said) to propose tenotomy, which he carried out on the dead subject. Dieffenbach performed the operation for a young boy on the 26th October, 1839, in the presence of seven medical men. The result was so satisfactory that it got into the public press, and rapidly spread from country to country. The only compensation for weeks of daily attendance on an unsuccessful issue in these pre-antiseptic days was in one case to be placed by the patient—an authoress—in the pillory in her next novel.

W. B. INGLIS POLLOCK.

(5) From consideration of the aetiology and pathogeny of the different forms of strabismus, as well as from clinical experience of cases that have been operated on, **Ferri**, of Milan, concludes that all interference should be addressed to the muscles of convergence, since that is the function whose disturbance constitutes strabismus. It is therefore the internal recti which must be treated, by advancement when convergence is at fault (divergent strabismus) or by elongation when convergence is in excess (convergent strabismus). The muscular antagonists of convergence, the external recti, may be treated surgically as a complementary measure, or when it is desired to correct the secondary consequences of strabismus.

A. ANTONELLI.

(6) **Hansell** (Philadelphia) gives his opinion as to the respective indications for tenotomy, advancement, and the combined operations, but reminds us that in dealing with the muscles we are too apt to forget the part played by convergence, divergence, and other complex functions of the oculo-motor mechanism, "the intricacies of which no physiologist has been able to fathom."

A. J. BALLANTYNE.

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<sup>(1)</sup> Berlin, 1842.—The book can be seen in the library of the Ophthalmological Society of the United Kingdom.

## OPHTHALMOLOGICAL INSTRUMENTS.

MADE BY

E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK.

- (1) The Keratometer
- (2) A new Schematic Eye
- (3) Würdemann Transilluminator
- (4) Electric Loupe
- (5) Epilation Needle
- (6) New Instruments

The above instruments are briefly described below—further information will be gladly given upon application, or, by arrangement, they can be obtained upon trial.

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(1) The Keratometer. A new model is being prepared which has several advantages over the present one. The scales are semi-transparent and illuminated, facilitating a quick reading, and operate concentrically instead of excentrically. The scale is a much more open one, providing closer dioptric measurements to be taken. Another great improvement in the new model consists of an arrangement whereby at a certain position in the rotation of the indicators the two subsidiary images are shut out and the instrument immediately becomes a low power corneal microscope. The stand is much improved in appearance and the whole is a big advance upon the present form. It is expected that this Keratometer will be ready early in January.

(2) A New Schematic Eye, consisting of a suitable metal mounting into which can be fitted glass optical eye forms. There is no attempt to produce variable conditions. Four standard refractive conditions are provided, thus avoiding confusion and unprofitable study on the part of the student. Form No. 1 embodies the refractive conditions of myopia, No. 2 hypermetropia, No. 3 emmetropia, No. 4 astigmatism. The refractive index of the glass is chosen to approximate the principal and nodal points to the correct positions, and the refractive conditions as above are caused by varying lengths. In the case of No. 4 the difference is obtained by the use of a toric cornea. An iris diaphragm is provided for change of pupillary aperture. The cost is 25/-.

(3) Würdemann Transilluminator. The cost of this well known instrument has been much reduced, and its lighting value has been much improved by fitting with the new metallic filament lamps.



(4) Electric Loupe. This instrument has now been made more compact by fitting metallic filament lamps. Whereas in the former model a 10-volt lamp was fitted, a 2 or 4-volt metallic filament lamp is used, thereby much reducing the size of the battery or accumulator required. Further, the projecting lens system has been discarded, thus reducing the cost, and it is now made in three powers, viz.: 8D, 9D, and 10D. A very light fibre head band is fitted in place of the metal band and the cords are detachable. The cost has been reduced to one guinea.

(5) Epilation Needle (the illuminated needle holder described in THE OPHTHALMOSCOPE, November 1909). In consequence of the many enquiries as to the method of using this instrument in epilation the following details are given. The needle holder has a pair of cords connected, one of which conveys the current for the lamp through the metal body of the instrument to the lampholder. The other cord is in connection with the insulated centre point in lampholder. As the instrument itself is thus directly connected to the battery any needle inserted necessarily becomes electrified, but until a separate circuit is completed by means of another connection from the opposite pole of the battery it remains inactive. The cord from the needle holder marked + should be connected with the + pole of the battery, and the needle will then become negative, as needed for electrolysis. If then an electrode (wrist) is connected to the + pole of the battery together with the above cord there will be two completed circuits, one through the lamp producing the light, and the other through the electrode, the body, and the needle. A 4-volt battery should be used, from which the lamp illuminates a circle about the needle point, thus making the selection of the follicle for the insertion and the same battery provides sufficient current for the electrolysis.

(6) New Instruments to be described in the next issue:—

- (a) A Portable Perimeter, by G. T. Brooksbank-James, F.R.C.S.
- (b) An Instrument for the Measurement of Stereoscopic Visual Acuity, by G. T. Brooksbank-James, F.R.C.S.
- (c) An improved Luminous Morton Ophthalmoscope.
- (d) Color Perception Lamp (New Model), by F. W. Edridge-Green, M.D.
- (e) An Improved Test for Malingerers.

The whole of the instruments above described are of London manufacture.

The "Meyrowitz Bulletin" can be obtained upon application to E. B. Meyrowitz, 1a, Old Bond Street, London.

## XXI.—THE OPHTHALMO-REACTION.

- (1) Stargardt, K.—On the action of instillations of tuberculin into the conjunctival sac. (Ueber die Wirkung der Einträufelung von Tuberkulin in den Bindehautsack.) *Zeitschrift für Augenheilkunde*, Juli, 1909.
- (2) Zimmermann, Charles.—On the value of ophthalmo-reaction to tuberculin. *Ophthalmology*, October, 1909.

(1) Stargardt (Strassburg) contributes a paper which reviews practically all that has been written about the Wolff-Eisner, or so-called Calmette, test for tuberculosis. The bibliography which the author appends to his article contains references to 156 papers, and this alone gives an idea of the comprehensive scope of the work.

In spite of all the thousands of experiments which have been recorded, and the numerous papers which have appeared in medical journals, Stargardt thinks that the test is still on trial and that no definite or final opinion can be given as to its value. Few critical scientists who read his valuable collection of facts will feel much difficulty in deciding for themselves that both von Pirquet's test and Wolff-Eisner's are perfectly unreliable, and that the latter is extremely dangerous. The author admits that the cuti-reaction is obtained in 90 per cent. of all adults! Need any more be said of this test? We think not. The various tuberculins used for the purpose are first described, a special warning being given against the Höchst preparation. This, according to Schmidt, is ten times stronger than Calmette's tuberculin, and appears to have induced some reactions which in gravity approximated to severe gonococcal blennorrhœa or diphtheritic conjunctivitis. The age of the solution is an important factor in the reaction. Krause and Hertel think that it becomes inert after 8 and 14 days respectively.

The aspect and variety of the reaction are carefully described, but the appearances are now too well-known to all our readers to need any detailed description. Suffice it to say, that the inflammation elicited may vary from a transient redness, lasting a few hours, to an acute muco-purulent conjunctivitis of the severest type, which may persist for several months.

The calamities and complications following the use of the reagent are narrated fully, and form such a heavy indictment against it, that few could consider it judicially and arrive at any other verdict than utter condemnation of the proceeding. Phlyctenules, keratitis, corneal ulcers, iritis, cyclitis, and phthisis bulbi, have all been seen after the instillation of a drop of tuberculin into normal eyes! One example is enough.—Görlich instilled one drop of Calmette's  $\frac{1}{2}$  per cent solution into the perfectly normal eye of a child 3 weeks old. An intense conjunctivitis, associated with blepharospasm, was followed by acute generalised keratitis, ulceration, perforation, staphyloma, and, finally, phthisis bulbi. Similar misfortunes are recorded by Schrumff and by many others. The list is a very formidable one.

When we come to consider the effect of tuberculin instillation upon diseased eyes, the catastrophes are even more lamentable. In fact, Calmette himself thinks that it is safer to submit the eye to an ophthalmologist for his opinion before trying the reaction.

The results of the histological examination of the phlyctenulæ, which so often accompany the reaction, will be studied with interest by ophthalmic pathologists. They contain neither giant cells nor tubercle bacilli, but are similar to ordinary phlyctenulæ. They are strictly analogous to lichen scrofulosum.

The theory of the reaction is discussed, but naturally our knowledge of sero-physiology is not at present sufficient to enable any definite explanation to be given.

The statistics as to the reliability of the reaction are of vital importance. Krause and Hertel have collected 1457 examples of the reaction. Of the certainly tuberculous only 87 per cent. reacted. Of doubtful cases 48 per cent. gave a positive result, whereas 45 apparently normal individuals shewed the characteristic inflammation. Faltin, using the records of 2996 tests, found the figures for the three classes to be 70 per cent., 48 per cent., and 11 per cent. respectively.

A certain number of cases which have undergone the test have been examined *post-mortem*. Several have been recorded in which the reaction had been obtained, but no trace of tubercle could be found after a most exhaustive search throughout the whole body.

The author concludes by saying "*after considering the clinical, surgical, and post-mortem material one can only say that a positive reaction to the conjunctival test suggests the great probability of active tuberculosis being present. Calmette's test is, however, not a sure means of diagnosis.*"

For ophthalmologists, who now rarely use it, the test is practically useless. It is dangerous to those very eyes where it is most needed, and even when a positive answer is obtained, it only speaks for the presence of tubercle *somewhere in the body*. The author rightly says that subcutaneous injections are much more valuable, for in this case a local reaction affords almost conclusive proof of a local tuberculous focus.

Instillations of tuberculin have been used therapeutically, and Darier has injected tuberculin subconjunctivally.

One can only conclude that *Calmette's test is dead*. We speak with feeling, for we ourselves have had some of the unpleasant experiences narrated!

T. HARRISON BUTLER.

(2) **Zimmermann** reviews some recent contributions to the already large literature of this subject, to elicit the opinions of authorities as to the safety and reliability of the reaction, and more especially as to its value in ophthalmology.

As regards reliability, there is abundant evidence that the conditions which determine the occurrence and severity of the reaction are still undetermined.

In ophthalmic work the test possesses the disadvantage that, even if we can assume that the positive reaction indicates the presence of a tuberculous focus, there is no local reaction at the site of the lesion whose nature we wish to determine. We miss this guide which we have in the case of the subcutaneous injection, and therefore the reaction may be due to a focus elsewhere in the body.

The author also quotes numerous instances of serious damage not only to diseased, but also to healthy eyes, from the use of the test, and quotes the pertinent remark of Stuelp that "We must aim to cure our patients from the diseases for which they consult us, and not inflict upon them new anxieties, distress, and disabilities."

For several reasons, therefore, it is preferable in ophthalmic cases to employ von Pirquet's test, or better still, the subcutaneous injection of tuberculin.

A. J. BALLANTYNE.

XXII.—REMEDIES.

- (1) Dutoit, A.—On the use of fluid somatose in eye diseases. (Ueber der Vervendung flüssiger Somatose bei Augen - Kranken.) *Zeitschrift für Augenheilkunde*, März, 1909.
- (2) Junius.—On tuberculin treatment of the eye. (Zur Tuberkulinbehandlung des Auges.) *Zeitschrift für Augenheilkunde*, Mai, 1909.
- (3) Horrick, E.—A case of conglomerate tubercle of the iris cured by bacillus emulsion. (Konglobierter Tuberkel der Iris. geheilt durch Bazillen-emulsion—Neutuberculin Koch.) *Zeitschrift für Augenheilkunde*, Mai, 1909.
- (4) Dransart.—Contribution to the curative and preventive treatment of detachment of the retina and to the treatment of progressive myopia. (Contribution au traitement curatif et préventif du décollement de la rétine et au traitement de la myopie progressive.) *L'Ophtalmologie Provinciale*, mai 1909.
- (5) Scheuermann, W.—On a case of solitary tubercle of the retina, choroid, and the optic nerve, cured by new tuberculin bacilli emulsion. (Ueber einin Fall von Solitärtuberkel der Netzhaut, Aderhaut und des Sehnervenkopfes, geheilt mit New-Tuberkulin-Bazillen-Emulsion.) *Zeitschrift für Augenheilkunde*, Juli, 1909.
- (6) Wirtz, R.—Further clinical experiences with the ionisation treatment of eye diseases. (Weitere klinische Erfahrungen mit der Ionentherapie bei Augenleiden.) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1909.
- (7) Igersheimer, P.—On the action of atoxyl upon the eye. (Ueber die Wirkung des Atoxyls auf des Auges.) von Graefe's *Archiv f. Ophthalmologie*, Bd. 71, 2 Heft, Juli 30, 1909.
- (8) Cauvin, Charles.—Fibrolysin in ocular therapeutics and especially in strictures of the nasal duct. (La fibrolysine en thérapeutique oculaire et notamment dans les retrécissements du canal lacrymal.) *La Clinique Ophtalmologique*, 10 octobre, 1909.
- (9) Charles, J. W.—Improvement in vision and visual field under the use of pilocarpine and lithia in beginning glaucoma (?) with loss of the other eye. *American Journal of Ophthalmology*, October, 1909.
- (10) Le Roy, Bernard.—The thiocyanates in the treatment of cataractus (sic!) conditions of the eyes. *American Journal of Ophthalmology*, October, 1909.

(2) Junius (Cologne).—A. v. Hippel and his collaborators, Schieck and Davids, were the first to place the treatment of eye diseases with tuberculin upon a practical basis. (v. Hippel's valuable paper can be found in v. Graefe's *Archiv*, 1904, Bd. LIX, I). Since the appearance of v. Hippel's article, tuberculin has been widely used all over the world, both by the author's method, and with the help of determinations of the opsonic index, according to the principles enunciated by Wright.

During the last few months experimental research and clinical experience have allowed us to form certain definite ideas with regard to ocular tuberculosis.



The old opinion that obvious tuberculous disease of the eye, in an individual presenting no clinical signs of tuberculosis elsewhere in the body, is to be regarded as a primary tuberculosis demanding immediate excision of the eye to prevent dissemination of the disease, has been generally abandoned. In the light of recent clinical and pathological experience, this view is no longer tenable. The author believes that, like the testis, the eye is an organ of predilection for early tuberculous infection. In the majority of instances the primary focus is in the lungs, although it may cause no hectic temperature or other symptoms of phthisis.

Ocular tuberculosis runs a benign course in a small proportion of the cases. No one can doubt that such examples have done well under general, non-specific treatment. In criticising the results of tuberculin treatment, this point must not be lost sight of. Frankly, however, the majority of tuberculous eyes run a malignant course, and are often associated with general tuberculosis.

The possibility that ocular tuberculosis may be favourably influenced by tuberculin is recognised almost universally. Most surgeons are of the opinion that the treatment is harmless.

Which is the best tuberculin to use? Sahli has clearly stated that the most that we can expect to attain by tuberculin injections is an immunity to toxins (Mithridatism). This immunity sufficiently explains the therapeutic action. In *Old Tuberculin* Koch has provided us with the tuberculo-toxin which is necessary to confer toxic-immunity. The preparation is naturally not chemically pure. In *New Tuberculin* and in *Bacilli-emulsion* Koch has, in addition to the tuberculo-toxin, the chief constituent, also added the substance of the disorganised bacilli themselves, in order to confer a problematical bacterial immunity to tubercle. This *bacterial immunity* has, however, not yet been attained in man, not even in a relative sense. Beraneck's Tuberculin is widely used in Switzerland and also in Germany. Koch's old tuberculin must be used only in patients who have no fever, new tuberculin can be used in all cases, even feverish individuals.

There is a difference of opinion still as to how tuberculin should be used. Sahli stands at one extreme advocating an excessively mild treatment, whereas Koch's school and especially Petruschky's think a reaction is essential. The great majority of surgeons, however, believe, with Junius, that the mild cure in which all reaction is avoided should be the rule; the reverse, the exception. Junius advises that the cure commence in children with an initial dose of 1/20 c.c.m. of Beraneck's solution A 128. In adults 1/20 c.c.m. of Beraneck's solution A 32. The injections should not be given oftener than twice a week, and the dose should be slowly raised. Impatience may do harm, and is seldom of advantage to the patient.

T. HARRISON BUTLER.

(3) **Horricker** (Triest).—A valuable record of a case in which a massive tuberculous affection of the iris in an eye which had been condemned to enucleation recovered completely under the influence of bacillus-emulsion injections. A girl, aged 7, suffering from tuberculous disease of one knee and tibia, had been treated for four months for a tuberculous affection of the eye without result, and, in consequence, enucleation had been advised. When the author saw the case, there was in the lower half of the anterior chamber a grey tumour with a nodular surface almost touching the cornea. The upper edge of the tumour reached 2 mm. above the upper edge of a small pupil which did not dilate with atropine. There could be little doubt, taking the whole condition into account, that the tumour was tuberculous in nature. A mercury inunction cure was kept up for four weeks, but the tumour continued to grow until it occupied three-quarters of the anterior chamber, and threatened to perforate the sclera. Tuberculin T.R. was sent for, but bacillus emulsion

arrived instead. After 43 injections, spread over eight months, the tumour had vanished, and the vision was 3/60. Later, this increased to 5/30 and Snellen 1.5.

When the eye was completely quiet and the patient cured, she gave a very doubtful reaction to von Pirquet's test with human tuberculin, but reacted actively to bovine tuberculin. The case is of very great interest, showing how one occasionally gets a really brilliant cure from tuberculin treatment.

T. HARRISON BUTLER.

(4) **Dransart** (Somain), from his experience of retinal detachment and progressive myopia, has come to the following conclusions:—

1. That in the present state of ophthalmology, the cure of retinal detachment must be considered as possible, but that it is difficult to effect and to maintain.

2. That until a more perfect curative treatment is discovered, the efforts of ophthalmologists should be directed towards carrying out preventive treatment as effectively as possible, such treatment varying with the nature of the detachments. These are grouped by Dransart in three large classes:—*(a)* Traumatic; *(b)* those associated with diatheses—albuminuric, glycosuric, arthritic, etc.; *(c)* myopic.

3. For traumatic detachments, preventive treatment comprises, firstly, prevention as far as possible against accidents, and, secondly, prolonged treatment of the globe until the vision of the contused eye is completely restored, which may last 5 or 6 months.

4. Preventive treatment of detachments due to or associated with diatheses should have as its basis: firstly, urinalysis, and a general *régime* appropriate to the diathesis or causal toxæmia; and, secondly, ocular hygiene; with accurate correction of errors of refraction and accommodation in order to obtain the maximum of vision with the minimum of ocular work.

5. Preventive treatment of myopic detachments should be based on *(a)* full correction of the myopia and astigmatism after atropinisation at the earliest age, *(b)* when the myopia progresses with diminution of vision, headaches, muscle and vitreous troubles, iridectomy must be resorted to, supplemented by injections of pilocarpine and an ocular hygiene, the object of which is to avoid flexion of the head on the trunk or any movement of the body which may lead to congestion of the cephalic vessels.

BERNARD CRIDLAND.

(5) **Scheuermann** (Stuttgart).—Last year d'Alessandro (Naples) reported a case of iris tubercule which it was expected would necessitate the removal of the eye, but which was completely cured by the injection of new tuberculin. T. R. Horriker (Triest) records the case abstracted above (3) and now the author publishes details of yet another example of the beneficial action which these vaccines sometimes exert upon the tuberculous injection of the eye. The case is shortly as follows.—A joiner's wife, aged 36, was admitted, suffering from a kerato-iritis of the left eye, the right being normal. The left showed slight ciliary injection, diffuse haze of the cornea with parenchymatous infiltration and keratitis punctata. Later on, the retina became more clearly visible. A large focus of choroidal inflammation was visible on the nasal side of the papilla forming a greyish-white patch. This was surrounded by a large number of shining white agglomerations (*drusen*) suspended in the vitreous immediately in front of the retina. Apical infiltration was detected in the lungs. A tuberculin cure, first with old tuberculin, as a test injection, and then with bacillus emulsion, was carried out.

As the patient had complained of severe headache and showed signs of a left facial paresis, she was examined by a neurologist. He found left-sided facial paresis, exaggerated reflexes of the right lower extremity, and slowing of the pulse to from 50 to 60 beats in the minute. After two months, the patient

was discharged. A year later, all the agglomerations in the vitreous had disappeared, some retinal hæmorrhages, which had been seen, were absorbed, and the white patch had become quiescent.  $V = 5/5$ .

The author believes the primary focus to have been in the lungs. There it infected the pontine region forming a secondary deposit, which, by way of the intervaginal spaces, reached the eye along the optic nerve. The headache was increased after the injections, even when there was no rise of temperature.

An excellent coloured plate and a wood-cut demonstrate the condition, which is one which can hardly be anything else but tuberculosis. The scotoma which resulted from the retinal lesion is shown by a sector-form defect in the field.

T. HARRISON BUTLER.

(6) Ionisation treatment in the hands of **Wirtz** has given further proofs of its efficacy (See abstract of Wirtz' first paper on the subject in *THE OPHTHALMOSCOPE*, 1909, p. 282). Sixteen cases of corneal ulcer, due to infection with pneumococci (9), diplobacilli (5) and staphylococci (2), were treated successfully with zinc-ions. Some of the ulcers were of a very severe type, so one big ulcer which had resisted Saemisch's operation and repeated cauterisation. The application of the current itself is not very painful, but pain sets in  $\frac{1}{4}$  hour later, and may last from two to twelve hours. Zinc-ions act as a powerful antiseptic which differs from other means by reaching into the depth of the tissue. They were effectual in smaller dose ( $\frac{1}{2}$  milliampere for  $\frac{1}{2}$  to 1 minute) also in 5 cases of recurring erosion of the cornea. Blepharitis ulcerosa is a further disease suitable for treatment with zinc-ions. Ten cases were subjected to it, some of which had resisted treatment with silver nitrate and ointment for months. After epilation, a half per cent. solution of zinc sulphate was applied with a current of 3 to 5 milliamperes for 3 to 5 minutes; 4 to 6, in the more obstinate cases 8 to 12 sittings were required. To his first six, Wirtz now adds ten cases of interstitial keratitis treated with iodine-ions; they have an irritant effect and their dose must, therefore, be carefully adjusted to the condition of the eye. The treatment cannot be considered a specific in interstitial keratitis, yet it proved superior to the usual remedies. Striking results were obtained with chlorine-ionisation in cases of corneal opacity. Of 26 patients 15 were improved considerably, six slightly, and in only four cases of very dense opacity of old-standing did the treatment fail completely. Daily sittings for 4 to 16 weeks were required lasting 2 to 3 minutes with a current of 3 milliamperes and a physiological salt solution. In two cases mercury-ions were applied from a 3 per cent. solution of mercury oxycyanide. The first patient suffered from syphilitic irido-cyclitis. As the eye remained deeply injected, irritable, and painful, and the perception of light was uncertain in spite of all treatment, enucleation had been proposed. After 18 sittings all redness and irritation had disappeared and vision improved to counting figures at one metre in some parts of the visual field. The second affection treated with mercury-ions was scleritis of doubtful aetiology in a patient who had gone through six months hospital treatment without result. The eye became pale after 12 sittings; after that, four fresh attacks of scleritis occurred, but each yielded speedily to ionisation treatment. C. MARKUS.

(7) The number of cases of loss of vision after the administration of atoxyl goes on increasing, and **Igersheimer**, of Heidelberg, must be cordially commended for collecting and discussing all the recorded cases of this deplorable contingency; the more so as the results of his experimental researches are also of considerable scientific importance.

The clinical course of a typical case of atoxyl amblyopia is, in short, as follows:

A few weeks or months after the beginning of the administration of the



drug, visual trouble commences in the form of cloudiness, obscurations, and scintillation. These symptoms may occur by themselves or may be accompanied by nervous complaints, such as fatigue, psychic depression, giddiness, tinnitus aurium, or deafness. An ophthalmoscopic examination at this stage, may not reveal anything abnormal; even the vision may not be appreciably impaired, but the visual field is nearly always contracted as regards the nasal side. The optic disc is often paler, at least in its temporal half. There was never a central scotoma. Both eyes are always affected, although frequently to a different extent. Unfortunately, nothing seems, even at this early stage, able to arrest the progress of the disease, and suppression of the drug does not make any difference. The loss of vision proceeds irresistibly, and the appearance of complete idiopathic optic atrophy is at last reached. There seems to be a certain amount of predisposition in eyes which are weakened by other causes (alcoholism, syphilis, prolonged mercurial medication, arsenic, etc.). The most dangerous results seem to ensue if the drug is administered daily, even if in very small dose, and if the dose of 0.4—0.5 gramme is exceeded for the week.

The only *post-mortem* examination ever made in man showed the strongest degeneration of the optic nerve fibres near the chiasma.

Igersheimer has injected atoxyl into the vitreous and under the conjunctiva of rabbits, and he found that nothing but the nervous matter showed signs of degeneration. In a rat a very curious isolated degeneration of the retinal ganglion (layer of rods and cones, outer nuclear and outer granular layers) took place.

Atoxyl intoxication thus stands entirely by itself, differing as well from those agents which invade the eye in the form of retrobulbar neuritis with central scotoma and free visual periphery (alcohol, tobacco, arsenic, iodoform, stramonium, hashish, etc.), as also from the other group in which the vascular changes prevail (quinine, *felix mas*, salicylic acid, etc.).

Atoxyl passes partly unchanged out of the system, but another part is decomposed into arsenic. The atoxyl amblyopia is essentially different from arsenical poisoning and not due to the action of this compound; the nervous tissues of the eye seem to have a peculiar affinity to the atoxyl-molecule, as a whole, as it circulates in the blood and to be thus specially liable to its toxic action.

R. GRUBER.

(8) **Cauvin** (Nice), after reviewing the literature of fibrolysin in eye practice, reports, as samples of what he has done, two cases of simple, old-standing lachrymation with nasal duct stricture, which he has greatly relieved by his method of employing the drug. The method is as follows.—A No. 1 or No. 2 Wecker's hollow sound is passed and left in the duct for 15 minutes. By means of an Anel syringe, inserted into the sound, the duct is flushed out with boiled water as the sound is slowly withdrawn. The sound is then re-introduced, and a second flushing is carried out with the contents of an "*ampoule*," containing 2 cc. of fibrolysin. A temporary sense of burning is felt by the patient, and unless the head is tilted forward to prevent the fluid passing into the pharynx, there will be an unpleasant taste of garlic and of mustard (due to the thiosinamin which is combined with salicylate of soda to form fibrolysin, which latter is very readily decomposed). In the two cases reported, prolonged catheterism of the duct had proved useless. Yet in one case there was a cure after two flushings with fibrolysin, and in the other the duct became of normal size, and allowed of easy probing after one such flushing.

ERNEST THOMSON.

(9) **Charles'** (St. Louis) case is admittedly incompletely reported, owing to difficulty in keeping the patient under observation. The chief point



brought out is that on a certain date there was diminution of visual acuity, + tension, cupping, and restriction of field in the right eye, and doubtful + tension with normal vision, fundus and (?) field in the left eye: on this date citrate of lithia gr. v. and large quantities of water were ordered, along with pilocarpine hydrochloride gr. i to 5 i for local use. In the long run under this treatment vision in the right eye was lost; while that in the left improved from  $\frac{1}{15}$  to  $\frac{1}{2}$ ; the tension of the left became normal and the field wider.

ERNEST THOMSON.

(10) "The fact that ophthalmologists are as conservative and slow to try new forms of medical treatment, as are members of the medical side of our profession; has been fully amplified by the letters received by the writer since the publication of his preliminary article\* in this Journal (May, 1909) on the cure of cataract without interference, etc." The cures of "cataractus conditions" seem marvellous, and include a case of "broad, chalky white scar which passed across the iris" as the result of ophthalmia neonatorum. We fear that **Le Roy** (Athens, Ohio) will continue to be at variance with other ophthalmologists if a—presumably—corneal leucoma is to be classed as a "cataractus condition."

ERNEST THOMSON.

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## BOOK NOTICES.

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**E. Merck's Annual Report of Recent Advances in Pharmaceutical Chemistry and Therapeutics.** 1908. Volume XXII. Darmstadt. 1909. Free to medical men by application to 16, Jewry Street, London, E.C. Price through a bookseller, 1s 6d.

In Merck's *Annual Report* we have, as usual, an impartially written account of the therapeutic acquisitions of the last twelve months. One or two of the more novel ophthalmic items may be briefly glanced at.—Adonidin, a glucoside obtained from the *Adonis vernalis*, has been used as a 1 per cent. aqueous solution in glaucoma, iritis, irido-cyclitis, and corneal trouble. Its analgesic powers appear to be considerable, since three drops of the solution are said to relieve the agonizing pain of glaucoma. The several ophthalmic applications of fibrolysin are described. It has been used by Windmüller and J. Galezowski as a local application in corneal opacities, and by Dolganow and Lewitskaja in cases of optic nerve atrophy, retinitis pigmentosa, and syphilitic choroïdo-retinitis. Roure's results in hypopyon-keratitis from the local application of a 1 per cent. solution of formaldehyde are mentioned. Itrol (silver citrate), dusted over the lesion, has been used by F. R. von Arlt in the treatment of external diseases of the eye. Perhydrol, in a 1 per cent. to 3 per cent. solution, has been recommended by Ischreyt in traumatic corneal ulcer and also in affections of the lacrymal sac. Mergal (mercuric cholate) has been employed by Messmer in various forms of irido-cyclitis with good results. Leucofermantin (Merck), a normal animal serum whose content in anti-ferment, as compared with the tryptic leucoferment of man, is so far enriched that it is at least equal to that of normal human blood serum, has been employed by Hagen in abscesses of the lids and also in acute dacryocellulitis.

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\*For abstract see THE OPHTHALMOSCOPE, September, 1909, p. 637.

**Minor Ophthalmic and Aural Technique.** A short treatise dealing with minor procedures about the eye and ear. Adapted to the use of those requiring a comprehensive knowledge of this subject. By ALFRED NICHOLAS MURRAY, M.D. 1909. Chicago: Cleveland Press. Price \$3.

*Minor Ophthalmic and Aural Technique* by Dr. Alfred Nicholas Murray, of Chicago, U.S.A., is a book of 233 pages, of which something more than one-half are devoted to the ophthalmic portion of the subject. There are numerous illustrations.

As regards the ophthalmic part of the book (the only portion on which we are competent to express an opinion), we do not hesitate to say that the old phrase "What is new is not true, and what is true is not new," might have been coined in its condemnation. Into 156 pages the author has brought together a curious collection of things, which range from the Calmette reaction, on the one hand, to domestic measures of weight and capacity, on the other. Nothing appears to have been forgotten. This heterogenous material has been thrown by the author into six chapters, as follows:—I. General considerations; II. Anatomy and Physiology; III. Inflammations and commoner diseases; IV. Therapeutics and minor procedures; V. Operations and preparations therefor; and VI. Miscellaneous, including dressings, bandages, dark glasses, artificial eyes, and so forth. The result can only be described as unsatisfactory. The impression left upon the reader's mind is that he has been regaled with an exasperating example of book-making, in which scissors and the paste-pot have taken a larger share than anything else. This impression is strengthened by a glance at the preface, where we learn that "the subject matter presented has been gleaned from innumerable sources, so many, in fact, that it would be impracticable to give individual credit for the material used" (p. 14).

A quaint suggestion is made on page 18 when speaking of instrument cabinets provided with glass shelves. "A four-candle-power electric light," Dr. Murray writes, "burning constantly inside of the case will prevent any deposition of rust on the instruments." "This case," he continues, "also serves very well as an incubator in bacteriological work." After this admission can we wonder that the author lays stress on the necessity of disinfecting his instruments prior to operation?

In the chapter dealing with the anatomy and physiology of the eye we are told that the superior oblique muscle "passes through a little loop on the inner (*sic*) wall of the orbit" (p. 33). In this country, at all events, the treatment of ecchymosis, or ordinary "black eye," does not include, as advised by Dr. Murray, "incision of the skin to evacuate the blood clot," nor do we teach that "the pains of eye-strain are invariably bilateral" (p. 64). That in ophthalmia neonatorum "infection usually takes place during passage of the child's head through the vagina," as stated on page 54, is another point concerning which there may well be differences of opinion. Dr. Murray believes (p. 61) that trachoma "is transmitted chiefly by the secretion," but he does not tell us in what other way the infection could possibly be passed from one person to another.

The chapter on therapeutics contains some statements with which everybody will not find himself in accord. For example, it is news to us that argyrol is "somewhat anæsthetic" (p. 85), that a solution of homatropine hydrobromate "deteriorates rapidly" (p. 87), or that one of adrenaline is "very stable under any conditions" (p. 89). The author, as we think rightly enough, insists upon the advantages of oily solutions of physostigmine,

atropine, cocaine, etc. But his statement that "pure castor oil or pure olive oil are perhaps the best excipients" is both ungrammatical and opposed to experience. According to Dr. Scrini, of Paris, who has written a monograph on the employment of alkaloids in oily solution,\* the best oils to use for the purpose are olive oil, nut oil, and oil of vaseline, the action of which upon the eye is non-irritating. On the other hand, almond oil, neats-foot oil, and (to a less extent) castor oil, are more or less irritating.

If the author's statements, as shown above, are not above criticism, neither is his English. The ugly word "bulbus" is used over and over again instead of "globe" or "eyeball." On page 73 we are told that "one should look out for the spurting of secretions when forcibly separating the lids; as they are often projected a considerable distance under such circumstances, and might reach the eye of the examiner." To us, to "look out" for the pus would seem a likely way of incurring the very accident the author appears anxious to avoid. To talk of albinos being unable to prevent large quantities of light from entering the eyes unless "they squint the lids together" (p. 32) may be a colloquialism, but is none the less a misuse of the meaning of a well-known and widely-used English word.

A word as to the illustrations, which, as we gather from the preface to the book, are "original with the author," who certainly cannot always be congratulated upon his work in that direction. With the dissection needle figured on page 153 we doubt if the cornea could be penetrated, while even if that were accomplished, the shank, as drawn, would allow the aqueous to escape to the last drop. The drawing of a leech, which appears on page 106, resembles nothing in the wide world as much as an elephant's trunk, and requires merely a bun firmly fixed in the gaping proboscis to recall happy childhood's days spent in the Zoological Society's Gardens in Regent's Park, London.

SYDNEY STEPHENSON.

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## CORRESPONDENCE.

[While THE OPHTHALMOSCOPE will at all times welcome correspondence from its readers, the Editor does not hold himself responsible for any views expressed in this column.]

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### THE DIAGNOSTIC SIGNIFICANCE OF THE PUPIL AND ITS REFLEXES.

*To the Editor of THE OPHTHALMOSCOPE.*

SIR,

—Recently I reported in THE OPHTHALMOSCOPE a number of instances of retro-bulbar neuritis, and said in connection with Case VII, a boy of seven years of age in whom the optic discs, five years after the attack, were very white, at the same time that vision in each eye was  $\frac{6}{5}$  with full fields:—"It is peculiar that the right pupil, while acting to light, should during several careful examinations, not have been seen to act to accommodation." (This peculiarity afterward entirely disappeared.) In his valuable Review on the pupil, in THE OPHTHALMOSCOPE of August, 1909, Dr. A. J. Ballantyne says (page 547): "*Failure of the near vision reflex.*—Loss of this reflex has

\* For review of Dr. Scrini's book see THE OPHTHALMOSCOPE, 1906, p. 659.

already been mentioned as a part of the symptom described as 'absolute rigidity of the pupil,' but just as the light reflex may fail while the near vision reflex remains (Argyll Robertson pupil), so some cases have been seen in which the near vision reflex alone was lost. Morax denies that this ever occurs. Heddäus says that it is easily overlooked, and is probably more common than is supposed. Bach doubts its occurrence as an isolated symptom, due to a lesion of the centrifugal pupil-contracting path, but points out that it occurs alone in those cases in which the faculty of convergence is in abeyance, in which case, it is probably due to a lesion which breaks the path between the cerebral cortex and the ocular-motor nucleus.'

I remain, Sir,

Yours, etc.,

A. W. STIRLING, M.D.

Atlanta, Georgia, U.S.A.,  
November 19th, 1909.

## THE DIPLOSCOPE.

*To the Editor of THE OPHTHALMOSCOPE.*

SIR,

In the letter to THE OPHTHALMOSCOPE (November 1909) Mr. N. Bishop Harman writes:—"The article I wrote is, I believe, the longest and most detailed account of the diploscope that has appeared in English." I repeat, before the the article of January 1909, in the *Ophthalmic Review*, Dr. J. Jameson Evans, of Birmingham, had written in THE OPHTHALMOSCOPE, October 1908, a long and very good article dealing with the Diploscope.

Mr. Harman goes on to say:—"My particular offence in Dr. Remy's eyes is that I neglected his three letters test. On turning up this test, in his first and fullest paper which Dr. Remy commended to my study, I find the description of it occupies only one page in his book of 68 pages. Dr. Remy says in his letter he has described 16 experiments. I gave two of them, those which he dealt with at most length in his numerous papers; I chose them for that *reason* and no other. I had the pleasure of meeting Dr. Remy at Moorfields last July. He mentioned this matter to me then and I gave him this explanation which appeared to satisfy him."

Notice that my letter in THE OPHTHALMOSCOPE appeared in October, 1909—*i.e.*, a long time after this meeting in July. I wrote, October 1909:—"Read my first pamphlet page 9. The sixteenth experiment (three letters . . . ." There is printed sixteenth instead of sixth! In reading page 9 it was easy to know that it was an error, but in July that error was not yet printed.\*

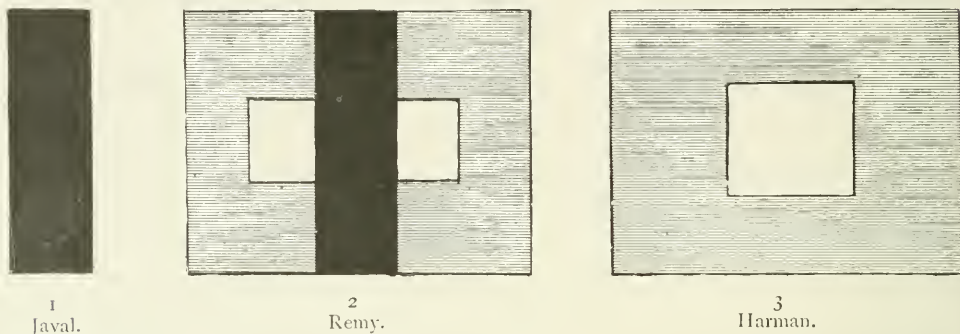
In my first paper (1901) I did not describe sixteen experiments, but seven only, obtained by means of two arrangements, pages 7 to 16, and in a more recent paper possessed by Mr. Harman (communication at the Ophthalmological Congress, Heidelberg, 1908) those seven experiments are condensed into three principal, as five are derived from those three principals. Therefore, if at Moorfields last July Mr. Harman had given me the *explanation* that he says concerning 16 experiments, I should not have been satisfied as he alleges. I remember this explanation very well, for I repeated it at Oxford, in order to excuse his first article of January, when several members of the

\*In January, 1909, *Ophthalmic Review*, page 11, in the article of Mr. Harman, there are also two printer's errors, *viz.*, left instead of right and right instead of left.



Congress counselled me to send a letter of rectification to THE OPHTHALMOSCOPE. Mr. Harman told me then: "It is my wife who has translated your papers." I confess that I was satisfied, and thought it a matter for admiration that a lady should have taken upon herself the translation of such a difficult subject.

Further, Mr. Harman says: "Dr. Remy appears to deny that the construction of his diploscope is based on Javal's bar reading test." To try to prove that Mr. Harman represents 3 figures.



I have shown Fig. 2 to several people having a good knowledge of the diploscope. No one was able to recognise the screen of the diploscope. The results with both the bar reading and the diploscope are also quite different. The bar is seen doubled, but both bars do not appear brilliantly. They seem like a penumbra, transparent and difficult to see.

With the bar there are five kinds of vision: To left, both eyes; then, left eye (direct); middle, both eyes; then, right eye (direct); to right, both eyes.

With the diploscope, the 2 holes are doubled and appear brilliantly in a striking manner as three (physiologically) or four (pathologically).

The results in the reading are the reverse (crossed), and the description that Mr. Harman gives of his test is perfectly adapted to three letters. "The plan of the instrument is such that three kinds of vision are required to pass the test. The right half of the test is read by the left eye, the left half by the right eye, and the middle strip by both eyes."

In the diploscope R E L are thus seen:—

E L read by left eye (crossed vision)

R E read by right eye (crossed vision)

E read by both eyes

and constitutes a mnemonic word.

The resemblance of the two tests (the diploscope and the diaphragm test) seemed so evidently clear to the members of the Oxford Ophthalmological Congress, that, as I have already said, they advised me to write to THE OPHTHALMOSCOPE on the subject.

A single and larger hole instead of two small holes, it is not a real difference.

In some cases a single hole is better than two, says Mr. Harman (co-ordinate movements of the patients eyes, etc.)

	T	U	
V	E	U	X
R	I	R	E
	V	A	

But with the 12 letters diploscope, as above, described in 1906, the single hole test (by closing all but one) was used several years ago, and the advantages praised by Mr. Harman are obtained in the same way.

The difference between the bar reading and the diploscope is too great to permit of a resemblance, and I believe when I made the diploscope that I never would have invented it, *i.e.*, changed the bar into holes, if I had considered the bar reading, and it is not the bar that I should have tried to employ in order to detect a skilful malingerer.

On the contrary, in my paper 1901, page 10, I have drawn attention to the box of Flee. It is the only instrument in which there is a resemblance to the diploscope, but this test is not sufficient, while the tests with the diploscope are varied and complete.

The diaphragm test is merely an exact copy of the box of Flee. The screen is exactly the same, with the same single hole, and in reading exactly the same results can be obtained with it.

I am, Sir, yours faithfully,

A. REMY, M.D.

Dijon, France.

[This Correspondence must now cease.—EDITOR.]

## A MODIFICATION OF SNELLEN'S COLOUR TYPE.

*To the Editor of THE OPHTHALMOSCOPE.*

SIR,

In the December number of your journal, Dr. John Pearson suggests a modification of Snellen's colour type ("FRIEND") test for malingering. It is now some thirty years since I brought this test with me from Donder's clinique at Utrecht and introduced it at Moorfields. Mr. W. Adams Frost and myself concocted the word "FRIEND," a word capable of forming two English words by using its alternate letters.

Now the great feature of this test, emphasised by the late Professor Snellen, was that it did away with the necessity of using prisms, for however useful prisms may be for testing simultaneous binocular vision, etc., as a test for malingering they should not be used, because the malingerer is at once on the alert and suspects a trap. If the "FRIEND" test is properly used, I have never come across a single case where it has failed.

It seems almost unnecessary to add that in using the "FRIEND" test the colour of the glasses in the trial frame must be identical with those of the test.

My contention is that Dr. Pearson in introducing prisms as a modification is doing what Professor Snellen tried to avoid, and by making the malingerer possibly suspicious is lessening the value of the test.

I am, Sir,

Yours very truly,

ERNEST CLARKE.

LONDON, W.

December 10, 1909.

## OBITUARY.

ROBERT MARCUS GUNN, M.A., M.B., F.R.C.S.

Born 1850—Died 1909.

WE greatly regret to announce the death of Robert Marcus Gunn, which occurred on November 29th, he being in his 60th year, after a long and painful illness. He was born in the year 1850 in Dunnet, Sutherlandshire, and after a private education, he studied at St. Andrews and Edinburgh University, where he graduated M.A. in 1871 and M.B., C.M. in 1873. He came to Moorfields in 1873 and studied under Mr. Couper, and about the same time he worked at the comparative anatomy of the eye at University College under Professor Schäfer. In 1875 he took vacation charge of the Perth General Asylum, where he did important work on the eyes of lunatics. He then went to Vienna and studied under Jaeger. In 1876 he was appointed Junior House Surgeon at Moorfields and Senior House Surgeon soon after. Here he left his mark by making many improvements. In December, 1879, he started on a voyage to Australia, and there continued his studies of the eyes of animals. Many of his results were published in *The Journal of Anatomy and Physiology*. He assisted in working up the zoological collection from the "Challenger" expedition. He was the Arris and Gale lecturer at the Royal College of Surgeons. He took the F.R.C.S. in 1882, and the following year was elected Assistant Surgeon at Moorfields. He also held the appointments of Ophthalmic Surgeon to the Hospital for Sick Children, Great Ormond Street, and to the National Hospital, Queen's Square, London. For a short time he was Assistant Ophthalmic Surgeon to University College Hospital. In 1906 he was President of the Ophthalmic Section of the British Medical Association at the meeting held in Toronto. In 1907 he was elected President of the Ophthalmological Society of the United Kingdom, and he was still serving in this office when attacked by the illness which ultimately proved fatal.

Marcus Gunn will be chiefly remembered as a most accomplished ophthalmoscopist, in which branch of science he particularly shone. He was a good all-round operator, and was one of the comparatively few surgeons who always did a preliminary iridectomy before removing a cataract.

He wrote no books, but published many papers, and for years he was editor of the *Royal London Ophthalmic Hospital Reports*, in which publication he always took the greatest interest.

He was fond of outdoor pursuits, and he was more particularly interested in botany, marine zoology, and geology. The greater part of his holidays he spent in obtaining geological specimens, the best of which were acquired by the British Museum shortly before his death.

He was a loyal colleague and a fast friend to those who had the pleasure of his esteem and regard. He was one of those whom a junior always felt he could trust, and many is the time he would listen to what a young house surgeon would tell him, and give him the soundest possible advice on delicate points which called for anything but publicity.

Among his numerous friends his loss will be deeply felt, and the medical profession at large will mourn the death of an illustrious member at so comparatively early an age.

Mr. Gunn leaves a widow and two children, to whom we tender our deepest sympathy.

C. DEVEREUX MARSHALL.



ROBERT MARCUS GUNN.  
Born 1850—Died 1909.





The following appreciation of Mr. Marcus Gunn has been contributed by his friend, **Mr. Edward Nettleship** :

Robert Marcus Gunn came of an old Scandinavian stock, settled for many generations in the north and north-east of Scotland. He was the youngest and last survivor of two sons and two daughters, was born at Dunnet, in Sutherlandshire in 1850, and died in his 60th year on the 29th November after a painful and distressing illness, which began nearly a year ago. He leaves a widow and two daughters. He was an early sufferer from influenza, and had several attacks ; it is doubtful whether he ever regained his original strength after the first attack. Educated first at Golspie, and then at a larger school at St. Andrews, he went at the age of 14 to Edinburgh, where he graduated with distinction, taking the M.A. in 1871, M.B. and C.M. in 1873. He was there at the same period as Robert Louis Stevenson, but the two became only slightly acquainted. His teachers included Syme and Lister, and on the ophthalmic side, Walker and Argyll Robertson. Gunn learnt or taught himself the "direct" method of ophthalmoscopic examination before leaving Edinburgh.

In 1873, having an introduction to Mr. Couper, he began to attend at Moorfields, and in the early months of 1874 worked at the comparative anatomy of the eye under Professor Schäfer at University College. The summer vacation in this year and again in 1875, was spent in medical charge of the Perth District Asylum, mainly with a special view to the examination of the fundi of a large number of lunatics in reference to the then recent work on the subject by Clifford Allbutt. He found the eyes of his lunatics as free from changes as those of any similar sample of normal persons. He was fond of the Asylum work for its own sake, liked the inmates, and was liked by them ; for he felt no fear, and went amongst them as if they were ordinary people ; only once was he set upon, the offender being an old woman with melancholia, who resented his morning greeting, and suddenly "went for" him, but was promptly pulled off by another inmate who had been watching and came to the rescue.

December, 1874, to June, 1875, was spent in Vienna, chiefly under Jaeger, with whom Gunn seems to have been a favourite pupil, and to whom he became much attached. Jaeger used an improved form of Helmholtz's original ophthalmoscope, and insisted upon all members of his class using the same model. Gunn considered Jaeger a much greater teacher than either Arlt or Stelwag. On returning to London, he again worked with Mr. Couper at Moorfields until he was appointed junior house surgeon in August, 1876 ; he became senior in December, and retained that office until November, 1879. He was an extremely good house surgeon, and various improvements in the nursing, note-taking, care of instruments, and results of operations for cataract coincided with his term of office, and were certainly in part due to his initiative. He was, like Mr. Couper, a thorough believer in Listerian principles.

In December, 1879, after a small send-off dinner, got up by the late James E. Adams, then one of the assistant surgeons, and attended by about a dozen contemporary assistants and others, he took a voyage to Australia with the special object of collecting the eyes of marsupials and monotremata for microscopical research. His work on the comparative anatomy of the eye, which early attracted the notice of Bowman, appeared in part in *The Journal of Anatomy and Physiology* for 1877 ("Minute Anatomy of the Retina"), and 1884 ("Eye of Ornithorhynchus"), and elsewhere in 1888 ("Embryology of Retina of Tellosteans"); he also assisted with the zoological material

brought home by the "Challenger" expedition; but his Arris and Gale lectures, upon the same lines, at the Royal College of Surgeons were not published.

Taking the F.R.C.S. in 1882, he was elected assistant surgeon to the Moorfields Hospital in August, 1883 (this vacancy being due to the resignation of Mr. Wordsworth), and became surgeon in November, 1888. About the year 1885 he was appointed ophthalmic surgeon to the Hospital for Sick Children, Great Ormond Street, and in 1886 to the Queen Square Hospital for the Paralysed and Epileptic. There had been other less important ophthalmic hospital appointments, none being held for very long. Some considerable time later he was for a time assistant ophthalmic surgeon at University College Hospital—the only appointment he held at a general hospital with a medical school.

In 1906 he took a trip to the United States, and whilst there delivered an oration "on Certain Affections of the Optic Nerve" before the American Academy of Ophthalmology and Oto-Laryngology, in which he defended the thesis that the initial oedema of the disc in papillitis from cerebral tumour, the origin of which has given rise to so much controversy, is due to the pressure on the small veins of the pial sheath (by the fluid in the inter-sheath space) which veins are to a great extent the normal channels for the { return } of blood from the papilla.

He had promised to take part in a discussion upon one of his favourite topics at the Belfast meeting of the British Medical Association last summer, but he was then too ill to attend.

At the time of his illness Mr. Gunn was senior surgeon to the Moorfields Hospital, ophthalmic surgeon to the National Hospital for the Paralysed and Epileptic, Queen Square, a Visitor for King Edward's Hospital Fund, and President of the Ophthalmological Society.

Apart from his daily private and hospital ophthalmic work, his interests were to a large extent centered in the retina, optic nerve, and visual functions in health and disease. Probably the piece of work that he would care most to be associated with is embodied in his oft-quoted and far-reaching paper upon the ophthalmoscopic evidence of retinal arterial sclerosis as a sign of similar changes in the arteries of the brain and other organs (*Transactions of the Ophthalmological Society U.K.*, Vol. XVIII, 1898). He had also discovered some time before Miley's paper (*Transactions of the Ophthalmological Society U.K.*, Vol. VIII, 1888), upon the prospect of life in renal retinitis, that persons with this retinitis seldom lived long, and although he was himself far from being a stickler for strict priority, we may well quote what he said upon this point in 1886 (*Transactions of the Ophthalmological Society*, Vol. VI, p. 334) in discussing at a meeting the differences between the retinitis of diabetes and chronic nephritis—"In my experience," he writes, "it is most exceptional to see an old case of albuminuric retinitis; this latter affection seems to occur at a late stage of the general disease, so that death supervenes before the retinal changes have existed very long." He has repeatedly told the writer that he had been led to this conclusion by finding that patients with this retinitis who came to his demonstrations for teaching purposes, could seldom be found when written to, to attend again some months or a year later, and that this was found on enquiry to be due, in most of these cases, to the patient having died in the interval.

Whilst alluding to unpublished work, it may be mentioned that Gunn was one of the first, if not the first, of the Moorfields staff to insist on the importance of studying minute changes in the cornea and iris under such

enlargement as can be got by the strongest available simple microscope. The lens he used was procured, by his request, by a friend who bought it in Paris. It served as a model for the similar magnifiers now in general use.

When in Vienna he was much impressed by the systematic teaching of ophthalmology there, and soon after his appointment to the Moorfields staff, he was the means of regular courses of instruction being commenced. At first this teaching was confined to ophthalmoscopy, but other courses were gradually added, and the present flourishing school of ophthalmology at the Hospital is the result.

Though not a copious writer, Mr. Gunn published a considerable number of papers and observations, in addition to those already mentioned, of which the following are the most important:—

"Note on certain Retinal Reflexes Visible with the Ophthalmoscope," *R.L.O.H. Reports*, Vol. XII, 348 (1887).

"Light-percipient Organs and Light and Colour-perception," *Ibid.*, Vol. XII, p. 101.

"On Sympathetic Inflammation of the Eyeball," *Ibid.*, Vol. XI, pp. 78-102, and 273-326.

"Amblyopia from Bisulphide of Carbon," *T.O.S.*, Vol. VI.

"Growth of New Lens-fibres," *Ibid.*, VIII and XV.

"Unilateral Nystagmus," *Ibid.*, Vol. VII.

"Peculiar Appearance of Retina" (called "Crick-dots" by author, but generally known as "Gunn's dots"), *Ibid.*, III.

"Peculiar Foveal Reflex in Myopic Amblyopia," *Ibid.*, Vol. VIII.

"Toxic Amblyopia," *Ibid.*, Vol. VII.

"Acute Bullous Eruption of Skin and Conjunctiva," *Ibid.*, Vol. XVI.

"Pemphigus of Conjunctiva," *Ibid.*, Vols. XIII and XV.

"Bowman Lecture—Visual Sensations," *Ibid.*, Vol. XX.

"Ophthalmoscopic Evidence of Increased Arterial Tension, and of General Arterial Disease," *Ibid.*, Vols. XII, XVIII, and XXIV.

"Retinitis Circinata," *Ibid.*, Vol. XVIII.

"Hæmorrhage into Optic Nerve Sheath," *Ibid.*, Vol. XVI.

"Keratitis Nodosa, Family Case," *Ibid.*, Vols. XXII and XXIX.

"Family Optic Atrophy," *Ibid.*, Vol. XXVII.

"Presidential Address," *Ibid.*, Vol. XXVIII.

"Congenital Malformations of Eye," *O.R.*, Vol. VIII, 2 Lectures (1889).

"Hæmorrhagic Disease of Retinitis (with obliteration of veins)." *Helmholtz Festschrift*, Plate II (1891).

He was a master of ophthalmoscopic examination, his description and interpretation of minute changes at the fundus being seldom questioned by his colleagues and always accepted as final by his pupils; no light praise when spoken of one of the staff of a hospital where, as we have seen it somewhere stated, "Ophthalmoscopic examination has gained the position of a fine art." It was his conviction of the importance of cultivating the direct method that in a great measure explained his somewhat discouraging attitude towards retinoscopy as likely to lure the modern student from an adequate study of slight changes at the fundus.

He was a man of considerable intellectual gifts and brain power, and an exceedingly keen and accurate observer; his mental grasp was quick, clear, and strong; his judgment careful and well-balanced; and a certain matter-of-fact simplicity was set off by a ready sense of humour. Very fond of reading he had the gift of rapidly extracting the points he was interested in, and what he read he remembered. Here it is worth recording that his father and father's brothers, although occupied in farming pursuits, managed to secure



a University education under difficulties that would have hindered all but the most determined; it is on record that these lads walked a hundred miles from their home to Aberdeen, sleeping where they could, in order to attend the University courses, and this not once but each term.

Marcus Gunn's character might be described as little removed from that of the perfect knight; courageous and pure in body and mind, modest but clear and strong in his convictions, if sometimes intolerant, never aggressive, sweet of temper, ready always to see the better side, scrupulous in giving credit where due, with a touch of Highland hauteur that rendered him sensitive and quick to resent without respect of persons whatever he judged unworthy in motive or act; void of desire for wealth as such, and valuing it even for what it brings less than some of his friends may have wished. His influence depended largely on the conviction that he was true and loyal throughout, and never satisfied with slipshod examination or partial knowledge. Himself singularly guileless, he was a good judge of character and motives in others. He would have been a more conspicuous figure, but probably less happy and not more wise or useful, but for the independence of character that led him from the very first to recruit body and mind with long congenial and not too busy holidays. From boyhood he was devoted to outdoor pursuits, especially shooting, botany, marine zoology, and geology. For many years past he had collected fossils, chiefly fishes and plants of the Jurassic and old red sandstone systems, from Scotland to Dorsetshire. It is satisfactory to know that a large number of his most valuable specimens have recently been acquired by the British Museum. The classification and description of his collections he had always looked forward to as an occupation after retirement from hospital work, an event that would have come in the ordinary course in a few months had he lived; indeed, as far as his own personal tastes and wishes were concerned, the completion of the geological work was perhaps his strongest motive for wishing to live; and it was noticed in his illness that he roused up at the mention of the fossils when scarcely anything else seemed to interest him.

His invariable considerateness for others was never displayed better than in his last illness, during the cruel course of which, without ever neglecting what was necessary to his condition, he never permitted himself, however distressed, to lapse from his habitual courtesy and cordiality to all around him; and almost to the last he not only repeated daily his thanks to each friend who came to see him, but would apologise "for being such poor company to-day."

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## NOTES AND ECHOES.

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### Deaths.

DR. KARL THEODOR, Duke of Bavaria, the well-known ophthalmic surgeon, died from kidney mischief on November 30th last, at Kreuth, Bavaria, after a somewhat lengthened illness. His life was very different from that of the other members of his family, the Wittelsbachs. He was a relative of the "mad king of Bavaria," who committed suicide by throwing himself into a lake; his sister, the Austrian Empress, was assassinated several years ago at Geneva; his nephew, the Austrian Crown Prince, made away with himself in a very mysterious manner.

Duke Karl Theodor served for some time in the Artillery, but after the death of his first consort, Sophia, a daughter of King John of Saxony, he decided to study medicine, despite the well-nigh insuperable obstacles thrown in his way by his family, who did not regard medicine as a profession suitable for a Grand Duke. "So many of us," Duke Theodor is reported to have said in answer to this objection, "are soldiers, whose business it is to kill, that it is high time some of us took to curing." He worked with Ivanoff, at Mentone, and with Horner, at Zürich. He completed his studies in Munich, where in 1872 he graduated honorary doctor of medicine in the University. In 1880 he was authorised, by special decree of the Imperial Chancellor, Bismark, to practise as a doctor. His enthusiasm was unbounded. From 1880 to 1888 he spent two months out of every year in Vienna, in order to study under Billroth, Fuchs, and others. At Tegernsee, in the Bavarian Alps, where he practised ophthalmology, patients flocked to the ducal *klinik*, so that the accommodation of the hospital was speedily strained to its utmost capacity. Additions were made to the institution at the Duke's own charges. His second consort, Maria Josepha, of Portugal, a Princess of Braganza, whom he married in 1874, dedicated herself to tending the sick, and acted as the Duke's assistant in many operations. Patients unable to pay were seen for nothing, while others paid a fee, which went towards the upkeep of a hospital built by him at Munich. In March and April of each year the Duke practised in Meran. He is said to have performed upwards of 7,000 operations for cataract. His name and fame were widely spread when a few years ago he was summoned by telegram from Kiel to attend the Kaiser, whose eye had been injured by a rope while cruising in the Hohenzollern. The Duke, who quite recently had been honoured by degrees from the University of Louvain and of Brussels, was buried in the Castle Church at Tegernsee.

The following has been contributed by **Professor Ernst Fuchs**, of Vienna:—

On the 30th November the Archduke Karl Theodor, of Bavaria, departed this life. Born in 1839, he became first an officer, taking part in the Bavarian-Prussian struggle in 1866, and in the war against France in 1870, and being in several battles, among them those bloody ones of Gravelotte and Sedan. It was this experience of the horrors of war which excited in him that keen desire to help his fellow-creatures which drove him to take up medicine. He quitted the army, studied medicine, and in 1872 received the diploma of doctor. Since he was particularly interested in ophthalmology, he went to Professor von Arlt, in Vienna, attending his lectures and receiving special instruction in ophthalmology and operating from his then assistant

Dr. Fuchs. Thus he made progress. He attended lectures given by the celebrated surgeon Billroth, but, being delicate (suffering from a pulmonary affection), he felt himself unequal to major surgery, and soon confined his energies to ophthalmology. He treated eye patients in his hospital at Tergernsee, near Kreuth, his summer residence; while he had a second clinic in Munich, where he stayed part of the winter. He spent another portion of the winter months, for his health's sake, at Meran, in South Tyrol, though indeed it was not exactly to the benefit of his health to give, as he did, hours daily to treating and operating upon eye patients. In addition to the assistance of qualified men, the Archduke had that of his second wife, who helped to nurse the sick.

The wish to heal was the cause which forced the Archduke into the path of medicine, and since the most striking results of the healing art lie in operative surgery—the blind seeing in a few minutes by means of cataract operation—so did the Archduke become with heart and soul an operator. With splendid art and success he carried out over 5,000 cataract operations. During the first years of his medical activity he also occupied himself with histological work, and wrote upon changes of the vitreous body in myopia and upon the inflammation of the retina in nephritis.

The Archduke was an exceptionally amiable, kind-hearted man, who not only treated and operated upon his patients gratuitously, but when they were poor, often helped them materially in other ways. He was graced by great modesty, especially with his teachers.

VIII, SKODAGASSE, 13, WIEN,  
December 12<sup>th</sup>, 1909.

With deep regret we announce the death of Theodor Saemisch, aged 76 years, formerly professor of ophthalmology in the University of Bonn, Germany. We hope to publish some notes of the career of our distinguished colleague in our next number. R.I.P.

The death is announced in his thirty-fifth year of Henry Langlands Spark, assistant surgeon to the Royal Eye and Ear Hospital, Bradford. He graduated at Edinburgh University in 1901, and had practised in Bradford for about five years. Death was due to pericarditis.

The deaths are also announced of Frank B. Sprague, a member of the American Academy of Ophthalmology and Oto-Laryngology, and of Isham S. Burdett, an eye and ear specialist, of Crab Orchard, aged 75 years.

\* \* \* \*

MR. GEORGE COATS has been appointed ophthalmic surgeon to the Hospital for Sick Children, Great Ormond Street, London, W.C., in succession to Mr. J. H. Parsons, resigned.

Mr. R. E. Bickerton has been appointed ophthalmic surgeon to the Evelina Hospital, in succession to Mr. Sydney Stephenson, resigned.

Mr. W. G. Thomas has been appointed medical officer to the Metropolitan Asylums Board Ophthalmic School at Swanley, Kent.

The following gentlemen have been appointed assistant surgeons to the Sunderland and Durham County Eye Infirmary: R. S. Hubbersty, J. C. Pearce and R. G. Cunningham.

Dr. Alfonso Neuschüler has been recognised as *privat-dozent* of ophthalmology at Rome.

\* \* \* \*

The  
Ophthalmic Review.

THE editorial department of our venerable contemporary, the *Ophthalmic Review*, will, we understand, undergo changes with the beginning of the present year. Dr. W. G. Sym (Edinburgh) and Mr. W. G. Laws (Nottingham) will be replaced in the editorial chair by Mr. J. B. Lawford (London) and Mr. E. E. Henderson (London).

\* \* \* \*

Ophthalmological  
Society.

IT will be remembered that a short time ago a *referendum* was taken as to the desirability or otherwise of amalgamation between the Ophthalmological Society, on the one hand, the Royal Society of Medicine, on the other. The numbers obtained in this way were announced at an ordinary meeting of the former society held on December 9th. They were as follows:—for amalgamation, 136; against amalgamation, 147; majority against amalgamation, 11. An analysis of the returns brings out a couple of interesting points: (1) that the London members of the Ophthalmological Society were, upon the whole, in favour of amalgamation; (2) that the provincial and foreign members were opposed to any such step. Exact figures were: for amalgamation, London 71, against amalgamation, London 34. For amalgamation, provincial and foreign members, 65, against 113. Finally, it is perhaps significant that of a Society which numbers 477, only 283, or 59 per cent., thought it worth while to record their opinion on this vital point.

\* \* \* \*

The Notation of  
Astigmatism.

WITH regret we observe that the proposals for the notation of astigmatism put forward by the XI International Congress of Ophthalmology have recently been adopted by the Paris Ophthalmological Society on the motion of Dr. Victor Morax. The following were the resolutions adopted:—(1) that all indications in figures, not accompanied by an explanatory scheme, should be interpreted in the sense of the notation recommended by the Congress; (2) that unless the contrary be expressly asked for, all trial-frames and other apparatus destined for the measurement of astigmatism, shall be graduated in accordance with the notation of the Congress. The Paris Society further decided that the conclusions it had reached should be officially communicated to the *Syndicat* which represents the opticians as a body. After what was said in THE OPHTHALMOSCOPE (October, 1909) we cannot but regard the action of the Paris Society as better calculated to retard than to advance the state of science.

\* \* \* \*



The Bradshaw  
Lecture.

THE Bradshaw Lecture of the Royal College of Surgeons of England was delivered on December 10th by Mr. F. Richardson Cross, of Clifton, Bristol. The subject was the brain structures concerned in sight and the visual field.

\* \* \* \*

The Middlemore  
Lecture.

THE Richard Middlemore Post-Graduate Lecture for 1910 will be delivered on December 1st by Mr. Sydney Stephenson, who will take as his subject, "The Consequences of Eye-Strain." The lecture is given annually in connection with the Birmingham and Midland Eye Hospital.

\* \* \* \*

School of Medicine for  
Women.

Mr. H. WORK DODD, senior surgeon to the Royal Westminster Ophthalmic Hospital, London, presided at the dinner of the London (Royal Free Hospital) School of Medicine for Women at the Trocadero Restaurant, London, W., on December 10th last.

\* \* \* \*

Honours.

UPON Professor Uhthoff, of Breslau, has been conferred the Prussian *Kronenorden* III. class.  
The title of extraordinary professor of ophthalmology has been bestowed upon Dr. Synlislawski, of Lemberg, Austria.

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# THE OPHTHALMOSCOPE.

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FEBRUARY 1, 1910.

TWO SHILLINGS.

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## ORIGINAL COMMUNICATIONS

## TREPHINING FOR GLAUCOMA.

BY

FREELAND FERGUS, M.D.,

GLASGOW, SCOTLAND.

Major Elliot's paper in the December number of THE OPHTHALMOSCOPE seems to require some remarks on my part, in so far as the operation which he therein describes and which he figures is precisely the same as the one which I have now done for some time for the relief of glaucoma. As several British ophthalmic surgeons are aware, I have up till now made but two communications on the subject: one at the Oxford Ophthalmological Congress held in July, 1909, and the other at the Belfast meeting of the British Medical Association held in the same month. An idea of my relationship to this operation is perhaps best conveyed by a historical statement of its evolution. I read with much interest the somewhat exciting controversy between Dr. Lagrange, of Bordeaux, and Dr. Abadie, of Paris, which appeared in the *Archives d'Ophthalmologie* for 1908. The operation which we owe to the genius of Lagrange, seemed to have given excellent results in his hands, and as I have always recognised the great merit of Lagrange's work, and have perfect confidence in his trustworthiness, I thought the operation well worthy of a trial. Dr. Abadie's objections seemed to me to rest on the rather insecure basis of histological pathology; although I by no means undervalue modern biological pathology, still the old histological pathology has always appeared to me to have been productive of little clinical advancement.

The clinical experience of a practitioner of the standing of Dr. Lagrange I regarded as of the very first importance. I therefore determined to attempt his operation, and did so on three separate patients towards the end of 1908. The results of these operations were quite satisfactory, and I became convinced from this small experience that the operation of Dr. Lagrange was a distinct advance. It seemed to determine a permanent drainage. It did not involve the same risk of such accidents as the wounding of the lens, or of the lens becoming dislocated into the wound, as occasionally happens in iridectomy, even with the most careful. It appeared to me that the operation was essentially a rational one and a good one. The only little objection I had to the *technique* was the method of transfixing with a linear section knife and then cutting away a bit of the edge of the wound with scissors and forceps. It occurred to me that if trephining could be managed, that then it would simplify the process enormously. I was not at that time aware that Argyll Robertson had trephined for the relief of glaucoma. He reported three cases, but, as I will show on another occasion, his operation and mine are absolutely and entirely different: be it said all the same that none of the cases done by that great practical master of ophthalmic surgery were successful, and I presume he thereupon abandoned the operation.

Many years ago I had seen the trephine invented by Bowman used for his operation for conical cornea. On inquiry, I found that these trephines were still in the instrument case of the Glasgow Eye Infirmary. I had them put in order, and on the 5th day of January, 1909, did my first operation. I first dissected the conjunctiva from the periphery towards the cornea, and laid the

flap of conjunctiva on the surface of the cornea while I used the trephine. I selected for the purpose the medium size of Bowman's instruments. I entirely removed the portion of sclera marked off by the trephine, replaced the conjunctiva and stitched it into position. A few days afterwards I again performed a precisely similar operation, and so soon as I was sure of the matter, I wrote to Dr. Lagrange telling him that I thought he would find this a very convenient modification of his operation. I had a cordial letter of thanks from him saying that he thought the suggestion a good one, and asking about Bowman's trephines, for the only instrument of that sort with which he was acquainted was the one of von Hippel. Thus, by the month of February, 1909, Professor Lagrange was in full possession of the knowledge of the fact that I had introduced this very slight modification of his operation. I am no draughtsman, but I made a sketch of the thing when I wrote to him, which indicated that my operation was carried out for the most part at the lower and external aspect of the cornea, and it also showed the conjunctival flap lying over the cornea.

As occasion required, I performed the same operation until the spring of 1909, except that I had introduced another modification which I think of importance in so far as it is beneficial. I began to take an iris repositor and to pass it in at the wound made by the trephine, keeping it in close contact with the sclera and the cornea till I saw the point of it well in the anterior chamber.

Mr. E. Treacher Collins very properly said in the discussion at Belfast that my operation, as now performed, was not merely a trephining but was also a cyclodialysis. I have combined the trephining with cyclodialysis since the month of March, 1909. I do not remember to have performed a simple trephining since that time. On looking over my correspondence, I do not find that I conveyed the information of this little change to Dr. Lagrange. The matter stood thus then in the spring of 1909. I had been performing trephining or trephining with cyclodialysis from the 5th of January of that year, and, so far as I was aware, the only people who knew of these operations were Professor Lagrange, to whose genius we owe the method, my own assistants, and one or two medical visitors who happened to be in the clinic when I was performing the operation, amongst whom was Colonel Burke. I have a great horror of premature publication of such a serious thing as a new operation for a critical condition like glaucoma. No one has a right to recommend any change on well established procedure in so serious a disease unless his clinical experience has been such as thoroughly to warrant him. I certainly would never think of publishing an operation for a disease such as glaucoma unless I had had more than a year of clinical experience at my back. I would deem a period of a few months as wholly insufficient. I was therefore greatly astonished to receive a courteous letter from Mr. R. W. Doyne, when he was making the arrangements for the Oxford meeting, asking me to come to that meeting and to demonstrate the operation which he was good enough to call mine. How he ever came to know that I was doing this operation is to me a mystery. I do not remember to have spoken to any of my London friends about it. Mr. Doyne's letter at once showed me that more people than I thought had heard of my operation, and therefore I acceded to his invitation and duly attended at Oxford. I stated quite plainly at that meeting my adhesion to the older views of the pathology of glaucoma, to those views which we owe largely to Mr. E. Treacher Collins and to Mr. Priestley Smith. I said that my so-called operation was but a modification of the one devised by Lagrange, and thereafter I operated using a trephine somewhat like Bowman's and an ordinary iris repositor.



On that occasion I had the great advantage of the personal assistance of Mr. Sydney Stephenson, while Mr. Priestley Smith himself was standing close beside me. I think these gentlemen will admit that that was, in brief, what took place at the Oxford meeting.

About a fortnight later I attended the meeting of the British Medical Association, at Belfast, and on the second day of the meeting of the Section made the only communication that I have yet officially made on what I regard as a modification of a very useful and important operation for glaucoma. Anyone interested in the matter will find from the report of the meeting that I there also mentioned the conjunctival flap, removal of a piece of the sclera with the trephine, and the introduction of the repositor. It led to a very interesting discussion, which was taken part in by Mr. G. A. Berry, of Edinburgh, Professor E. Fuchs, of Vienna, and Mr. E. Treacher Collins, of London, and several other gentlemen. I would not have made the communication at Belfast had it not been that I already had spoken on the subject at Oxford. How Mr. Doyne came to hear of the operation I do not know, but the first indication I had from him that he was aware of it was his very kind invitation to come to Oxford to the meeting and to operate. I may have acted a little prematurely in the matter, but an invitation from such a quarter was, I felt, one which I could not refuse.

From my first operation until the present moment I have never had any doubt as to the necessity of entirely removing the piece of sclera marked off by the trephine. I have never done it in any other way, and so cannot speak from experience, but I think it certain that if the portion of tissue is not removed, cicatrization will at once take place and the effect of the operation be entirely lost. In another important respect I differ from Major Elliott, in so far as I did not think over the operation for a prolonged period as he seems to have done. I never thought of any such operation at all until I read the very interesting controversy between Dr. Lagrange and Dr. Abadie. I could not help thinking that Dr. Lagrange was essentially in the right, and that his operation was an important addition to our armamentarium. It occurred to me, however, that the piece of tissue was perhaps better removed with a trephine than with scissors and forceps. The only addition which I have made to Lagrange's procedure is that I invariably pass a repositor between the sclera and the ciliary body and iris into the anterior chamber. On another occasion I hope to communicate the results of the operation to my professional brethren, but meantime I may say that the operation thus performed has given me entire satisfaction.

A very odd coincidence has occurred in connection with this whole matter. Towards the end of the month of October, 1909, I received a letter from a Major Elliott, of Madras, asking particulars of the operation which he speaks of as "your operation." In this communication he informed me that on two occasions he had performed my operation, that in one of these he had been much satisfied with the result, but that the other had not been so good. He asked me also to recommend to him a trephine, and requested me to ask Messrs. Weiss, of London, to send to him any trephine which I had invented, or which seemed to me specially suitable. Lastly, he raises what I call the "bogey of the ciliary body." He mentions that his two operations were done with a von Hippel's trephine, odd to say, the same one that was mentioned by Dr. Lagrange in his communication to me. I think it possible that when my correspondent wrote to me about special trephines he had heard that I had been using a specially constructed one at the Oxford meeting. As already indicated I intend to discuss the whole of this glaucoma operation on another occasion, but it is perhaps not out of place to mention here that I have gone

back to the original trephine of Bowman, generally using either the medium or the largest size. My reply was that I laid no special weight on a particular trephine, that I considered the danger of sympathetic disease from operation in the neighbourhood of the ciliary body as non-existent, and explained to him in that communication the pathological basis on which I rest that opinion.

## SOME ORBITAL COMPLICATIONS OF INJURIES OF THE HEAD AND FACE.

BY

J. JAMESON EVANS, M.D., F.R.C.S.,

SURGEON TO THE EYE HOSPITAL, BIRMINGHAM, ENGLAND.

**I.—Atrophy of the Optic Nerve.**—Optic atrophy is one of the most frequent complications of injuries of the head and face. It is generally of the primary type, showing no sign of a previous neuritis, and little or no diminution in the size of the retinal vessels.

It is often the only change observed after a fall on the head or orbital margins, the other structures of the eye and orbit being normal in structure and function. On the other hand, it may be associated with lesions of other structures of the eye, of other orbital nerves, or of the muscles or blood vessels, &c.

In most cases of injury of the optic nerve leading to atrophy, the patients complain of failure of sight in one eye immediately after the accident, or, if unconscious at the time, as soon as they recover consciousness, or when they have the bandage removed, if they have had the eye tied up before they have had time to notice the effect on the sight or before they have recovered consciousness. In cases of severe injuries of the median region of the head or face, both eyes may be affected, and partial or complete blindness of both eyes result. As a rule, however, the lesion and defect of vision is one-sided—restricted to the optic nerve on the injured side.

Unilateral optic atrophy may result in complete or partial blindness of the affected eye. The partial blindness may take the form of a contraction of the field, which is often most extensive in that part of the field which corresponds to the direction of the blow, *i.e.*, temporal contraction when the force has been applied to the external orbital margin; the upper part of the field diminished when the blow has been from above downwards, &c. This, however, is by no means constant, but it happened to be so in all the earlier cases reported by me (*British Medical Journal*, July 8th, 1905). Further experience has shown that this form of contraction, though perhaps the most common type of unilateral partial blindness, is by no means as frequent as I had thought at first. In a few cases there is a central scotoma, generally associated with some peripheral contraction of the field.

It will be noted also that in the great majority of cases of unilateral optic atrophy, there is a slight contraction of the field on the other side, although there is no apparent change in the disc on that side.

The following cases illustrate the various types of symptoms observed, and the nature of the injuries which produced the atrophy of the optic nerve or nerves:—

CASE 1.—B.C., aged 13, was crushed between a bus wheel and the kerb-stone when 3½ years of age. He was said to have had contusions of the back and of the back of the head, and was treated at the General Hospital, Birmingham, for fracture of the base of the skull.—No sign of injury now apparent.

At the present time, the pupils are sluggish and the eyes show conjugate nystagmoid movements to the left. R.V. =  $\frac{6}{4}$ . L.V. =  $\frac{6}{10}$  (only when looking sideways and to the left).

The right eye has a scotoma of 2 mm. (on perimeter) for white, red, blue, and yellow, and 5 mm. for green. In the left eye the scotoma for white and all colours is about 15 mm. The right field is almost concentrically contracted, about 20°. The left is similarly contracted, about 30°.

Ophthalmoscopically: both discs white and atrophic with considerable narrowing of the retinal vessels. There is also some veiling of the superior temporal vessels just above the disc in the left eye. The atrophy is apparently post-neuritic.

CASE 11.—W.R., aged 23 years. Three years ago he was struck on the face by a crate, weighing about 3 cwt., which fractured the root of the nose—frontal and nasal bones—and burst the left eye. He was unconscious for three weeks. When he regained consciousness he found he was absolutely blind.

Present State: Left eye disorganised.

Right: White atrophy of the optic nerve. The vessels are of good calibre but they show some white lines, suggestive of some previous neuro-retinitis.

CASE 3. E. A., aged 37 years. Lost the sight of the right eye 14 years ago as the result of a fall on to a spike which cut the outer third of the right eyebrow. He was unconscious for a quarter of an hour. There was no bleeding from the nose but he spat up blood for a week or so. He noticed the blindness when the bandage was removed two or three weeks after the accident. A scar on the outer third of right eyebrow indicates the site of the injury. Present state: right convergent squint due to paresis of the external rectus. Right optic disc white: retinal vessels very slightly narrower than those of the left eye.

RV = No P.L.

LV =  $\frac{6}{6} + \frac{3}{50}$  D. Sph.  $\frac{1}{90}$  Field contracted 10° temporally.

CASE 4 is very similar to Case 3, but there is spurious optic neuritis in the sound eye. E. H., aged 13 years, fell out of a window on to an iron spout 10 years ago. At the junction of the outer and middle third of the right eyebrow there is a linear scar, above which there is a marked crescentic depression of the skull which occupies the greater part of the right temporal region. The right optic disc is atrophic, but the vessels are of practically normal calibre. R.V. = No. P.L. Left eye shows decided marginal blurring of the disc with marked striation along the main vessels.

LV  $\frac{6}{6} c + 1\frac{1}{2}$  D. Sph. Left field contracted 10° on the temporal side.

CASE 5.—I. D., aged 54 years, fell off a ladder and cut left eyebrow 3 months ago and noticed failure of sight in the left eye 1 month ago. There is a scar over the inner part of the left eyebrow near the bridge of the nose. Pupil reflexes somewhat sluggish in each eye. Primary atrophy of the optic nerve of the left eye. Right fundus normal. Field full. No note of vision in either eye.

CASE 6. C. G., aged 22 years, had a fall off his bicycle 5 days before admission. He struck the outer part of the left eyebrow on the handlebar. He was unconscious for three quarters of an hour. Wound healed in two or three days. On admission, a small scar on the outer part of the supra-orbital ridge indicated site of injury.

RV  $\frac{6}{6} c - 2$  D. Sph.

LV  $\frac{6}{6} c - \frac{1}{50}$  D. cyl 180°. LV. Fingers at  $\frac{1}{2}$  metre.

Left field lost in upper and outer parts. Right field full. No fundus lesion in either eye. A fortnight later the left disc showed some pallor which later developed into a definite white atrophy. No alteration occurred in visual acuity and field.

CASE 7.—A. S., aged 18 years, was thrown off his bicycle over the handlebar seven days before admission. The left brow and side of face received the greater part of the force of the fall. He was unconscious for two hours. When seen by me there was a congested scar about the junction of the outer and middle third of the supraorbital ridge, and a "gravel rash" on the left cheek. Left pupil sluggish to light. R.V.  $\frac{6}{6}$ . L.V. = Fingers at 1 foot. The greater part of the upper half of left field was lost. Right field full. The optic discs seemed normal at the first visit, but 11 days after the accident, there was a slight pallor of the left disc and a slight narrowing of the retinal vessels. Later, definite primary atrophy of the nerve showed itself, but there was no change in the visual acuity or field. There was a relative central scotoma, and though he could recognise colours they all appeared very dull.

CASE 9. E. K., aged 71 years, was knocked down by a bicycle five weeks before admission and was cut on the outer part of the left eyebrow and root of nose, and bruised on the left cheek. There was no bleeding except from the cuts and no loss of consciousness. The sight of the left eye was noticed to have failed at once. On admission: scars on root of nose and outer third of left supraorbital ridge. Right pupil very sluggish to light. RV. = P.L. in the lower part of the field only. Right primary atrophy of the optic nerve. L.V. =  $\frac{6}{12} c + \frac{1.25}{50}$  D. sph.  $\frac{1}{90}$ . Upper part of the field contracted 20°.

Left fundus normal.

CASE 10.—W. T., aged 25 years, fell off his bicycle and struck left eyebrow 12 months ago, and has not been able to see with the left eye since. On admission: A linear scar of outer third of the left supra-orbital ridge extending on to the outer part of the upper lid. Left eye showed primary atrophy of the optic nerve. Arteries slightly contracted. LV. =  $\frac{6}{6}$  in the upper part of the field. RV.  $\frac{6}{12} c - 1$  D. cyl. 180° R.F. N. Field full. No material change during the last 15 months.

The following two cases showed very decided central scotoma:

CASE 11. C. C., aged 51 years, was knocked over on to his face by a bicyclist. He was unconscious for half an hour and bled from both nostrils for about half an hour after he came to. Two or three days



after the accident, he noticed that his sight was defective. On admission: an elongated scar over the outer half of the left eyebrow and a similar one parallel to it and about an inch above it on the forehead indicated the site of the lacerated wounds caused by the accident. Pupil reflexes were normal. The left disc was decidedly pale, especially in the lower and outer half. R.V.  $\frac{5}{6}$  L.V.  $\frac{1}{8}$  (iii) c + .75. Both fields contracted  $20^{\circ}$ — $30^{\circ}$ . R. scotoma 5 mm. for all colours. L. scotoma  $10$  mm. + for all colours. Two years later R.V. =  $\frac{5}{6}$  no scotoma. R. F.N. Field practically full. L.V. =  $\frac{1}{8}$  scotoma for white 1 mm., red and green 5 mm. Blue 10 mm. Primary atrophy of the disc; slight contraction of the retinal vessels. Field contracted  $10^{\circ}$ — $20^{\circ}$  (Temporal and Superior.)

CASE 12.—H. S., aged 19 years, had a fall from his bicycle about three years before admission, and injured the outer angle of the right orbit. Has been nervous and depressed since. He discovered the defective vision of the right eye accidentally some time later. On admission: right convergent strabismus. Right: atrophy of the optic nerve. R. field contracted  $10^{\circ}$ — $30^{\circ}$ . Central scotoma of about  $10^{\circ}$ .

R. V. <  $\frac{6}{60}$  c. +  $2\frac{1}{2}$  D Sph +  $2\frac{1}{2}$  D.cyl  $45^{\circ}$ . Left fundus normal. Field contracted about  $10^{\circ}$  temporal and nasal. L.V.  $\frac{6}{8}$  c. +  $5$  D.Sph +  $1$  D.cyl  $135^{\circ}$ .

CASE 13.—M. H., aged 13 years, fell down and displaced her incisor teeth (without knocking them out) when five years of age. Since then she has had a convergent squint in the right eye.

The right optic disc is atrophic, vertically oval with a crescent situated above and slightly to the nasal side. The disc is of a dirty-white colour and there are two fine fibrous deposits veiling the central vessels. The vessels are slightly contracted. There is a ring of slight deposit of pigment just outside the part of the disc which does not show the crescent, and there is fine diffuse pigmentation of the retina round the macula, which has a glistening centre with a shot silk halo. R.V. = P.L. in a small part of the temporal field only. L.V. =  $\frac{6}{6}$  L.F.N. Left field contracted  $10^{\circ}$  on the temporal side.

**II.—Atrophy of the optic nerve associated with direct injury of the orbital contents.**—These cases were associated with hæmorrhage into the orbit which was largely accountable for the symptoms, and which were of a more or less temporary character. The atrophy of the optic nerve—whether due to direct injury or to hæmorrhage into the sheath or nerve structure, is difficult to decide—was permanent and non-progressive.

CASE 14.—M. B., aged 15 years, when four years of age, was struck on the right lower lid by a broken iron shoe on the heel of the boot of her brother with whom she was playing. She was unconscious for two hours. When admitted there was a small wound of the lower lid near the inner canthus. The eye was proposed, and there was complete ophthalmoplegia (externa and interna) with ptosis. The fundus was normal with the exception of some dilatation of the retinal veins. R.V. = no P.L. A month later there was distinct atrophy of the disc and slight contraction of the vessels. The eye could be moved slightly up and down, but there were no pupil reflexes. A month later still there was some associated contraction of the pupil. Two months later the movements of the globe were almost normal. In another month there was slight pupillary reaction to light. R.V. = P.L. Since then the eye has become divergent, pupil dilated (10 mm.), reacting only to strong light. The movements are not perfect in any direction, and there is pseudo-nystagmus on extreme movements. She suffers occasionally from slight ptosis and has headaches when she attempts to read. The only sign of injury is a small black mark, about a quarter of an inch in length, in the inner part of the lower lid. L.V. =  $\frac{5}{6}$ . F.N. Field contracted  $10^{\circ}$  on the temporal side.

CASE 15.—S. H. P., aged 52, injured his left eye with a wire in 1903. Patient extracted the wire himself, and was admitted into the Manchester Royal Infirmary. Mr. Telford kindly sent me the following notes of the case:—"Wire accident. Optic nerve injured. Ecchymosis of the entire conjunctiva. Pupil moderately dilated. Movements of the eye normal, except inwards. Fundus appeared quite normal. No perception of light in the left eye at the time (May 28th, 1903). He attended on June 1st, but did not return." When I saw him, in August, 1903, the left media were clear, the disc white and atrophic, vessels contracted, with a few spots of central guttate choroiditis. There was a convergent strabismus of the left eye, and the left external rectus was weak. L.V. = P.L. in a small area in the temporal field. The right eye was normal, except for some pallor of the disc. The field was contracted  $10^{\circ}$ — $20^{\circ}$ , somewhat concentrically. Colour vision was good, but he had a central scotoma for red and green. He said he only smoked an ounce of dark flake tobacco per week.

CASE 16.—A boy, aged 4 years, fell on a knife, which penetrated the cheek and orbit. This was followed by marked proptosis and complete ophthalmoplegia, externa and interna, anæsthesia of the cornea, but no fundus lesion. There was no improvement, beyond diminution of proptosis, until a month later, when power began to return in the lid. Some three weeks later it could be raised so as to expose the lower half of the cornea, and there was slight power in the internal rectus. Three days later a diffuse keratitis appeared over the lower half of the cornea, associated with conjunctival and ciliary injection. Later an ulcer developed in this area of keratitis. Eventually the internal rectus recovered completely, and there was slight power of movement in all direction except outwards. The pupil was semi-dilated and immobile to light, convergence, and atropine. The optic nerve became atrophic. The anterior chamber was deep, and the tension of the globe remained persistently low.



CASE 17. (Examined with the consent of Mr. Gilbert Barling). A.D., aged 21 years, shot himself in the mouth with a revolver. The bullet entered the roof of the mouth in the midline at the junction of the hard and soft palate. The eye became proptosed and the eyelids discoloured, evidently due to intraorbital hemorrhage. When seen a fortnight later, there was marked hyperesthesia of the lids and globe, and there was pain on movement of the eye. There was slight ptosis (spastic) and the lids were still discoloured. The movements were good except for a slight impairment of adduction. There was some conjunctival injection. The pupil reflexes were normal and the media clear. The optic disc showed two pale sectors—one up and in, and the other down and out. The rest of the disc was almost normal in colour. The vessels were practically normal in calibre. R.V. = Fingers at 1 metre. Lower half of the visual field lost. Contraction of the field about 30° elsewhere. L.V. =  $\frac{5}{6}$  (R). Field contracted about 10° superiorly. L.F.N. The bullet was localised and the orbit opened. The bullet was found below and close to, but not touching, the optic nerve.

**III. Optic Neuritis.** I have notes of only one case in which optic neuritis followed injury to the head. A spurious optic neuritis was noted in two other cases, *viz.*, case 4, which has been described, and case 23, described under injuries of other orbital nerves, below.

CASE 18. C. M., aged 14 months, fell on to his head from a window sill, three or four feet high, six weeks before admission. He had "concussion of the brain," and about a fortnight later his "spine became weak." His pupils reacted but slightly to light. They were contracted during sleep but dilated when awake. There was double optic neuritis and apparently hearing was defective on both sides. This patient was only seen once, the parents apparently having left the district since.

#### IV. Atrophy of the optic nerve associated with intraocular lesions.

CASE 19. C. M., aged 18 years, was struck over the outer part of the right eyebrow by a piece of wood, hurled from a circular saw, eight weeks before admission. He noticed that the right vision was defective when the bandage was removed three weeks later. On admission, there was a semi-circular scar extending from the forehead across the junction of the outer and middle third of the right eyebrow on to the upper lid. There was convergent strabismus of the right eye. The right optic disc was slightly swollen and pale, with decided narrowing of the inferior retinal arteries. There was a stellate rupture of the choroid at the macula, and fine pigmentary changes for some distance round it. Some streaky patches of choroidal atrophy and few spots of hemorrhage at the lower periphery. There was a scotoma (about 2 mm.) for white and colours. R.V.  $\frac{5}{6}$  barely. L.V.  $\frac{5}{6}$  c. + 1 Deyl 90°. Both fields contracted.

CASE 20.—T. H., aged 28 years, was struck on the head by a fall of coal 6 weeks before admission. He was buried under the coal for 5½ hours. When extracted he noticed that the left eye was blind and the left eyelids and side of the face were much swollen. There was no loss of consciousness and no bleeding from any of the cavities. When the swelling of the face subsided he found he could not raise the left upper lid. This ptosis only lasted a few days. When examined there was an extensive linear pigmented scar on the supraorbital ridge, extending from about the middle of the left frontal to the temple. There were small scars on the left eyebrow and about the root of the nose. The left eye was divergent and the pupil did not react to light. Consensual reflex good. L.V. = no P.L. R.V. =  $\frac{5}{6}$ . Field full. Ophthalmoscopically it was found that there was complete atrophy of the left disc, the retinal vessels were reduced to threads and largely replaced by white lines. The whole fundus was dotted over with clear-cut small black spots of retinal pigmentation. There was slight but general diffuse atrophy of the choroid.

CASE 21.—H. J., aged 9 years, was struck by a stone which bruised the left eyebrow at the junction of the outer and middle third, and abraded the cornea and sclerotic in the upper and outer segment of the globe. The anterior chamber was full of blood. When this became absorbed it was found that there was hemorrhage in the vitreous, and that the iris was ruptured and the lens dislocated. The optic disc was hazy and surrounded by a halo of retinal infiltration. The field was defective chiefly in the upper and inner quadrants. L.V. =  $\frac{5}{6}$ . R.V.  $\frac{5}{6}$ . Field contracted a little superiorly. Three years later the left optic disc showed temporal pallor and was found to be horizontally oval—fore-shortened, as it were, owing to an apparent displacement backwards of the lower and outer margin. Alongside of this margin was a crescentic atrophic area having a collection of pigment at its upper and outer horn. L.V. =  $\frac{5}{6}$ . Considerable contraction of the visual field as compared with that taken soon after the accident. Pupil reacted slightly to light. R.V. =  $\frac{5}{6}$ . Field contracted a little superiorly as mentioned above.

The following case shows an apparent relation between injury of the skull and the development of glaucomatous atrophy of the optic nerve.

CASE 22.—J. H., aged 27, was kicked on the nose by a horse nineteen years ago. Since then he has not seen well with the right eye. On admission there was R. divergent strabismus, and some corneal nebulae. Deep cupping of the disc which was atrophic. Some patches of atrophy and fibrous-looking streaks in the choroid. R.T. + 1. R.V. =  $\frac{5}{6}$ . L.V. =  $\frac{5}{6}$ . Tn.

**V. Injuries of oculo-motor and other orbital nerves.** It will be seen from the account of cases given that it is not uncommon to find traumatic atrophy of the optic nerve associated with injury to some of the oculo-motor

nerves, especially the sixth, and in the case of direct injuries also with lesions of branches of the ophthalmic division of the fifth nerve. In some cases, however, oculo-motor paralysis may be the only result of a fall or blow on the head.

CASE 23.—A. S., aged 11 years, was knocked down by a cart which bruised the right side of the face, eyelids, and temple. There was some bruising of left mastoid region and left knee. There was no loss of consciousness, but there was some haematemesis and bleeding from the throat on the night of the accident. The right eye was bandaged apparently at the time, and when the bandage was removed ten days later the patient had diplopia. Five days previously the mother had noticed that the left eye, which was not bandaged, did not move out as much as it ought to. When seen three weeks after the accident there was slight discolouration (from bruising) of the right temple and lids, a small triangular area of subconjunctival ecchymosis on the outer side of the eye; pupil, media, and ocular movements normal. She did not now complain of diplopia, probably because she always looked sideways. There was, however, distinct paresis of the *left* external rectus, although there was no sign of injury about that eye. The eye could barely be moved beyond the mid-line. Another curious feature of this case was the presence, as a coincidence or otherwise, of very marked spurious optic neuritis. Both discs were very ill-defined, and the veins somewhat full and tortuous. This tortuosity was more marked in the right eye.

RV =  $\frac{6}{1.5}c + 1$  D.cyl 90°  
 LV =  $\frac{6}{1.5}c + .50$  D.cyl 90° Fields practically full.

It took at least two months for the left external rectus to recover its action, and even four months later the patient complained of occasional diplopia. Examined four years later: V =  $\frac{6}{60}$  in each eye, fields full, orthophoria. There was some fullness and drooping of the right upper lid which has persisted till this year (nine years after the accident). In explanation of the affection of the sixth nerve on the left side, whilst most of the damage was on the right, it is possible that the injury to the mastoid, though ignored by the doctor in attendance and by the parents, and showing no mark at the time of examination by me, may have been severe enough to cause a fracture of the petrous bone, thus leading to injury of the sixth nerve, which is in intimate relationship to the apex of that bone.

**VI. Injuries to ocular muscles**—Instances of implication of the ocular muscles, as the result of direct injuries, have already been given (Cases 14, 15, 16, 17). In the following case the lesion was an indirect one, and was almost confined to one muscle (the left superior rectus).

CASE 24.—A. E. G., aged 39 years, was thrown off his bicycle on to the road. He was unconscious for two hours at least. When he regained consciousness he had diplopia. There was no bleeding from nose or ear. When examined, six weeks later, there was a scar about two inches long on the left temple, with discolouration of the skin around it. There was divergence of the left eye; crossed diplopia in the upper field, the false image being inclined away from the true. Lateral separation was greater in the right field. In the lower fields the fusion of the images was not perfect and there was occasionally a homonymous diplopia. The discs were normal, though possibly a little hyperemic. Fields full. RV.  $\frac{6}{10}$  LV.  $\frac{6}{10}$  c.  $\frac{-75}{-50}$  D. sph. cyl. 180°

The lesion in this case was probably a hæmorrhage into the sheath of the left superior rectus, and possibly also, to a less extent, into that of the left superior oblique.

### VII. Some Complex and delayed orbital complications.—

CASE 25.—F.C., aged 40 years, was knocked down by a runaway horse. When picked up he was unconscious and had a large scalp wound on the right side and bled from both ears. He soon regained consciousness and was apparently all right for three weeks. At the end of this time he developed paralysis of the third (with ptosis) fourth, sixth, and seventh cranial nerves on the left side. The symptoms remained stationary for about a fortnight when they began slowly to improve—the ptosis improving first. Three months later the facial nerve had quite recovered. The lid could be elevated half-way. There was slight movement of the globe—the superior oblique acted well. The left pupil was getting smaller, but was still larger than the right, and did not react to light. One year after the accident the eye moved well outwards, downwards, and inwards, but not at all upwards. Diplopia only on looking upwards. There was some ptosis, and in elevating the lid the frontalis came into action. The palpebral fissure was slightly narrowed.

The pupal was a little larger than the right and there was no reaction to light, accommodation, or consensually. Pupillary reactions were normal in the right eye. There was possibly a slight anaesthesia of the left cornea. The discs showed a little temporal pallor. Fields full. No scotoma. RV.  $\frac{6}{6}$  and J.i. LV.  $\frac{6}{6}$  part c + 1.25 D. J.i c + 3.50 D.

CASE 26.—Pulsating exophthalmos. N. N., aged 6 years, received a punctured wound from an umbrella rib of the left lower lid six months before admission. (The umbrella was a child's parasol which had its covering quite intact.) Immediately after the injury there had been free hæmorrhage from the small wound: there was some blood-stained discharge from the left nostril; the child was

"dazed" for a day or two, and she vomited frequently for about a week. A month after the injury the eye became proptosed, and pulsated synchronously with the heart: the veins of the lids and conjunctiva were distended and tortuous; the veins of the iris were also over-filled and produced a contraction of the pupil, which reacted to light, but did not dilate much when atropine was instilled. The retinal veins were very full and tortuous, and the optic disc presented an appearance of optic neuritis. Vision was markedly reduced. On auscultation of the skull, a pulsating bruit was easily audible, and the noise gave the patient considerable discomfort, especially when she was in noisy places. A little later she developed paresis of the left external rectus. The symptoms still persist, but are much less marked. Vision is practically normal, but there is slight convergent strabismus. The patient is still distressed by the noise in the head. The only sign of injury is a very small, almost imperceptible, scar on the inner part of the lower lid.

**VIII. Traumatic nystagmus.**—It is with some diffidence that I add these two cases of nystagmus, apparently the result of injury. In consequence of the very definite histories I am including them with the full knowledge that many objections may be raised to the view that they are of purely traumatic origin.

CASE 27.—J.K., aged 14 years fell off a bed and knocked her head against a chair, producing a "dent" on the right side of the forehead but not cutting the skin. Immediately after the accident the mother noticed movements of the right eye. The mother is convinced that there was nothing wrong with the child's eyes previously. After the accident the movements were so marked that they could be discerned at some distance and they were so distressing to look at that they made the mother's "eyes water." On examination, it was found that there was pronounced circumductory nystagmus of the right eye which was not increased by extreme movements of the globe—in fact, they seemed less in the latter position. Very occasionally there was very slight rotatory nystagmus in the left eye. This was so slight and transitory that it was difficult to elicit it. The nystagmus was also absent occasionally in the right eye. It was quite erratic in its coming and going and neither fixation or extreme movements of the globe seemed to modify it in any way. The fundi were normal, but a little pale owing to the general lack of pigment. The child had light yellow hair, the irides were grey with a brownish tinge. There was no suggestion of the albino about the hair, irides, or fundi. There was no history of any such ocular affection in the family. The patient is one of twins (2 girls). Her sister is very like her in appearance but has no nystagmus.

CASE 28.—(Examined with the consent of my colleague, Mr. Wood White). H.H., aged 38 years—a coal miner—fell down a pit shaft 27 yards deep, 6 weeks before admission, fracturing his nose and five ribs and cutting his face in several places. Since the accident he has noticed that objects and especially lights are "all on the move." He has worked 21 years in the pit (16 years with the safety lamp). He has never had anything wrong with his eyes before. When examined, there were scars on the left supra-orbital ridge, right side of the cheek and nose involving the right sac and canaliculi and causing epiphora. The fundi were normal, RV.  $\frac{6}{6}$  c + 2.5. LV.  $\frac{6}{6}$  c + 2. Fields contracted and spiral (the patient is now a neurasthenic). No scotoma. He had nystagmus in each eye. It was mainly rotary in type and was elicited on looking upwards. Lateral movements produced nystagmoid jerkings only. There was no nystagmus in the primary position. Movements of the eye were good and pupillary reflexes normal.

I have said little about the pathogenesis of these various complications of head injuries, my chief object being to present the facts which I hope will help in establishing some adequate theory or theories of their method of production. I have already discussed the question of optic atrophy following injuries of the orbital margins (*British Medical Journal*, July 8th, 1905), and it seems to me that the theories of fracture of the foramen, detachment of spicules of bone, and hæmorrhage into the optic sheath or nerve are hardly applicable to some of the cases recorded here and elsewhere. It is unfortunate that practically no *post-mortem* examinations have been made in cases which have been carefully examined clinically, and in the cases which have been examined *post-mortem*, no clinical observations have been made. I trust that in future this deficiency will be rectified by the co-operation of general and ophthalmic surgeons in the investigations of cases of head injury.



**TWO YEARS' EXPERIENCE OF THE OPHTHALMIA  
NEONATORUM DEPARTMENT OF ST. PAUL'S HOSPITAL,  
LIVERPOOL ; WITH REMARKS ON TREATMENT AND  
RESULTS.\***

BY

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A year ago I recorded in *THE OPHTHALMOSCOPE* the results of the first year's work of the Ophthalmia Neonatorum Department of St. Paul's Hospital, Liverpool. In the present article I propose to describe the methods of treatment which have been evolved from our experience, and to contrast the results of the past two years.

The department was instituted in January, 1908, when a ward of three beds and cots was opened and arrangements were made with the City Health Department for the use of an ambulance to transfer mother and child to Hospital when necessary. The value of the ward at once became evident in 1907, the year before the institution of the ward, when 45 cases were brought to the hospital ; in 1908, its first year, 75 ; in 1909, as the ward became better known, 142. Of course, these were not all serious cases or in-patients ; but the ward, which was increased to four beds and cots in the beginning of 1909, has been full almost continuously, and often, owing to lack of beds, cases, which would have been better as in-patients, have had to be kept in the out-patient department. Two particularly sad examples will be mentioned later.

In our new hospital, which we hope to have finished by the end of this year, means of expansion will be provided by a department consisting of one 4-bed ward, with two adjoining 2-bed wards, which can be used for ophthalmia cases when necessary, and for other cases at other times ; in addition a separate dressing room will be provided in the out-patient department, which will give more privacy to the mothers, and will prevent the annoyance of babies crying in the general out-patient department.

Before discussing treatment and results, I wish to make it clear that any credit which there may be is shared by my colleagues at the hospital ; by Mrs. Saffley, the late sister, by Miss Harvey, the present sister, and other members of the nursing staff who have all taken the greatest pains in carrying out the details of the treatment ; by Mr. Wadsworth, B.Sc. who has done all the bacteriological examinations ; and by Mrs. Adrian, Lady Inspector of Midwives, whose influence and enthusiasm have been most helpful.

The first point by which one has been impressed is that the gonococcus is the commonest germ which attacks the newborn child's eyes. Out of 136 cases in which a germ was identified, 97 were gonococcal, *i.e.*, 71 per cent.

The second point is that the gonococcus is practically the only dangerous germ, but it makes up by its virulence for the harmlessness of the others.

Thirdly, early recognition in the prepurulent stage is of paramount importance, in order that adequate treatment may be begun immediately. A rapid swelling of the eyelids, with acute hyperæmia of the conjunctiva, is very suggestive of gonococcal infection ; the discharge also is characteristic, flowing out, when the lids are opened, in a thin reddish stream, quite unlike the sticky

\*NOTE.—In *THE OPHTHALMOSCOPE* for June, 1909, the results for 1908 were given as 75 cases with 7 blind : one of these, after corelysis for anterior synechia, is now not totally blind.



discharge of one of the milder infections. While, however, it is possible clinically to suspect gonococcal ophthalmia in this early stage, nevertheless, it can only be made certain by a bacterial examination, and this we do as a routine custom on the first visit. This practice has been further extended by the encouragement of midwives to bring babies on the first day of birth when there is reason to suspect infection, but when signs have not had time to appear. A film is taken, the eyes are washed out very thoroughly and instructions given for the child to be brought back on the following day. Then if the film has shown the presence of gonococcus, steps are taken for treatment; if, on the other hand, the film is negative and there are no signs of inflammation, the case is regarded as safe. This method seems to me to be a more rational form of prophylaxis than the instillation of strong antiseptics, on the chance of infection, into the eyes of every baby born alive.

As far as actual treatment goes, I have found little cause to modify the methods which I described in the *Liverpool Medico-Chirurgical Journal* for July, 1908. Gonococcal ophthalmia is an acute suppuration due to a septic organism and should be attacked on the general surgical principles which have become established for the treatment of such infections. They are:—

1. Free drainage.
2. Frequent and thorough removal of pus.
3. Early operation to anticipate complications.
4. Maintenance of the general resistance of the patient.

In the first place, then, it is essential that free drainage should be given to the pus, which soon becomes locked in by the swelling and sticking of the eyelids. For this purpose warm wet dressings, covered by jaconet, are of the greatest use. Not only do they prevent the cohesion of the lids by the drying of the pus, but also they quickly reduce the inflammation, as evidenced by the rapid diminution of the tense, shiny appearance of the lids; by their means it soon becomes possible to retract the lids, and the pus is able to escape as fast as it is formed; at the same time they promote circulation and remove stasis of blood in the inflamed parts.

Secondly, all discharge must be washed away, and a glimpse of the cornea obtained whenever the eyes are dressed, which should be as often as possible, every two or three hours at least. A suitable and safe instrument for irrigation is a post-nasal tube, with curved flattened extremity which gives a flat stream. Attached to a Rotunda douche it is used to wash out the conjunctival sac with about a pint of sod. bicarb. lotion, 5j. ad. Oj., at a pressure of eighteen inches. The flat nozzle is used to pull down the lower lid, and, as a rule, when the upper lid is retracted by the fingers, the cornea can be seen during the irrigation. At first we used normal saline solution, but sod. bicarb. lotion is more effective in dissolving and washing away the pus.

If there are no contra-indications after all discharge has been removed, antiseptics are instilled, not with the idea of killing the germ, but of inhibiting its growth. For this purpose they are used weak and they appear to have a definite beneficial action. At present, after trial of various antiseptics, I prefer in the early stages silver nitrate 1 per cent. with 20 per cent. glycerine, as recommended by N. Bishop Harman. It is used in cases in which the ocular conjunctiva is not congested, and the cornea is clear; but if the ocular conjunctiva shows signs of congestion, argyrol 20 per cent. is substituted. Should the cornea be hazy, the argyrol is reduced in strength or stopped altogether, and weak eserine is used. In this we differ from the text-books, which recommend atropine, but I am confident that eserine is the better. If, however, the cornea continues hazy, and begins to

show at its margin the danger signal of a zone of inflammation, kerotomy is performed. I will not describe the operation here, but merely state that it was devised by my father in 1886 for the treatment of the graver inflammations of the cornea, and described by him in the *Liverpool Medico-Chirurgical Journal* for July, 1888: and by myself in THE OPHTHALMOSCOPE for November, 1909.

The following case illustrates its value:—

CASE 110.—September 1909. Male, æt. 1 month. Breast-fed. Mother states that discharge began on third day; midwife advised that child should not be taken to a doctor, as she could do all that he could do; she attended frequently and washed eyes with lotion; after 10 days child was taken to a doctor who sent it to a hospital where it was treated as out-patient for a fortnight. Admitted to St. Paul's Hospital on first visit at age of one month; discharge copious; film gonococci; both corneæ deeply ulcerated. The right cornea became perforated and Guthrie's (Sæmisch's) operation was performed; the left cornea was in almost as bad a state, but did not become perforated and kerotomy was done. Note on January 5th, 1910, right eye, total anterior synechia, eye shrinking; left eye, partial nebula, eye otherwise intact.

Fourthly, in regard to the general condition of the infant, the importance of breast feeding in these cases is not sufficiently emphasized in the text-books. Humanized milk is a poor substitute for mother's milk and the patent foods are worse. I am more and more impressed with the difficulty of saving severely infected eyes in bottle-fed infants; they seem to have no power of resistance and if an ulcer has formed it tends to spread rapidly, or at best heals very slowly. Out of the eleven blind cases, four are noted as being bottle-fed, a very large percentage, when it is considered that the vast majority of the total number of cases were breast-fed. Indeed, the only case which was not saved when taken in at the very beginning was a bottle-fed child.

The fear of injury to the mother by the removal to Hospital has proved groundless. Of 71 mothers who have been brought in, six only have given trouble: two had rises of temperature due to constipation and cured by castor oil; two had slight mastitis; one, after being out of hospital for the afternoon, had bronchitis for two days; and one was sent in with foul lochia, which cleared up with douching in a short time. Furthermore, the difficulty of carrying out these methods in the out-patient department and the advisability of admitting all serious cases into Hospital and keeping them there till quite cured are proved by the following two examples:

CASE 53.—October, 1908. Female: aged five days: breast-fed. Discharge began four days after birth: child brought on following day to St. Paul's Hospital. Film = gonococci. Treated as out-patient for a week, then admitted to ophthalmia ward, made out-patient in 18 days, owing to necessity of making room for more urgent case, eyes then clear and discharge slight. Brought back by neighbour, eyes had not been dressed for two days as mother had 'cramps in stomach,' lids very swollen, corneæ sloughing. Admitted immediately. Note on January 20th, 1909. R. shrunken. L. anterior staphyloma. Blind.

CASE 31.—March, 1909. Male, aged 9 days. Discharge began 6th day, reported by midwife to Mrs. Adrian, who sent it to St. Paul's Hospital. Film = gonococci. Could not be admitted owing to ward being full; later, when vacancy occurred, mother refused to come in. After one month's attendance as out-patient, the eyes were almost well, then the child was not brought for 14 days, by which time both corneæ were sloughing; child admitted at once. May 7th.—Kerotomy done on both eyes. June 29th.—R. Complete nebula and anterior synechia. L. Small nebula and anterior synechia, which can be released by operation, eye not blind.

By the generosity of a Liverpool lady, a fully qualified nurse, trained in the work, has been added this year to the staff of the Health Authority. She will visit all cases reported of inflammation of infants' eyes and will arrange for their adequate treatment. She will be kept informed of the cases discharged from the Ophthalmia Ward of St. Paul's Hospital, and of others attending the out-patient department, and she will supplement the treatment by visiting such cases in their homes. She will also supervise the removal of cases by ambulance to the Hospital.

Now as to results :

Of the 217 cases, 9 are totally blind. One of these has been described. The others are as follows :

CASE 11.—February, 1908. Female, aged 13 weeks. Eyes began to discharge on second day after birth. Attended by doctor and nurse at home. Discharge ceased in 7 weeks. Brought to St. Paul's Hospital at age of 13 weeks. Both corneæ found perforated. Note May 6th, 1908, R. Anterior staphyloma. L. Shrunk. Blind.

CASE 16.—February, 1908. Female, aged 11 weeks. Discharge began on third day. Treated by midwife, who attended each morning. On tenth day doctor was called in. Three weeks later he ordered the child to a hospital, where the case was pronounced hopeless. Brought to St. Paul's Hospital at age of 11 weeks, when both corneæ were found perforated. No discharge. Note on July 27th, 1909, R. Shrunk, L. Anterior staphyloma. Blind.

CASE 19.—April, 1908. Male, aged 4 weeks, bottle-fed. Discharge began on fifth day after birth. Treated at home. Child brought to St. Paul's Hospital at age of 4 weeks, when right cornea was found perforated, and left severely ulcerated. Admitted into ophthalmia ward immediately. Taken home by relatives against advice in three weeks. Note on March 17th, 1909, R. and L. Anterior staphyloma. Blind.

CASE 23.—May, 1908. Female, 16 weeks, bottle-fed. Discharge began on first day and lasted one month. Mother thought it was a cold and child was not taken to a hospital until 10 days' old. Brought to St. Paul's Hospital when 16 weeks old. R. Nebula for  $\frac{3}{4}$  cornea. Total anterior synechia. L. staphyloma. Blind. Admitted; corelysis performed on R.E.

CASE 57.—October, 1908. Male, aged 4 days. Bottle fed, mother being unable to suckle it after a few days. Discharge began at age of two days. Midwife sent child to doctor who sent it to St. Paul's Hospital. On first visit discharge copious. Film gonococci. Left lids very swollen. Admitted immediately. Child did badly on artificial feeding, humanised milk, etc., and corneæ sloughed. Note on December 5th, 1908, R.E. perforated. L. opaque. blind. February 6th, 1909. On enquiry, mother reports child has died of enteritis.

CASE 72.—June 1909. Female, aged 4 months. Disease began on second day; unregistered midwife treated child herself for fortnight, then took it to a doctor who ordered treatment, which the midwife carried out three times daily. When brought to St. Paul's Hospital, child was completely blind. No discharge. R. ant. staphyloma. L. shrunken. Midwife was reported to Health Authority, but being unregistered, she was outside jurisdiction and could not be touched. It was found, however, that she described herself on her cards as certified midwife, and for this she was prosecuted and fined.

CASE 84.—July 1909. Male, aged 3 weeks, bottle fed. Discharge began on third day; treated by doctor at home. When brought to hospital, at age of 3 weeks, both eyes were sloughing; owing to ward being full, child could not be admitted till third day of attendance. On first visit, both corneæ severely ulcerated; lids swollen, discharge copious; film=gonococci. Jan. 5th, 1910. R. and L. shrunken. Blind.

CASE 111.—Sept. 1909. Female, aged 14 days, breast-fed. Discharge began on seventh day, treated at home, eyes being washed with lotion every four hours. After a week sent to St. Paul's Hospital when right eye was found perforated, and left sloughing; film=gonococci. Admitted into ophthalmia ward. Discharged Oct. 16th. R. and L. complete synechia. Blind.

Two other cases which clinically resembled, but which, owing to the age of the patients, perhaps should not be classed as ophthalmia neonatorum, were brought to the hospital.

CASE 12.—Jan., 1908. Male, aged 6 months. Discharge began fourteen days before child was brought to hospital; other children of family had had sore eyes. On first visit R. cornea perforated. L. large ulcer. Admitted to ophthalmia ward; made out-patient Feb. 24th. Both eyes total nebulae. Blind.

CASE 92.—Aug., 1909. Aged 8 months, bottle-fed. Discharge began fourteen days before child was first brought to hospital. At end of first week taken to doctor, who treated child at home; then taken to another doctor who sent it to St. Paul's Hospital. When first seen, both corneæ were perforated. Film=mixed infection diplococci and streptococci (? gonococci). Child had been attending Children's Infirmary for some months for gastritis. Died on August 16th.

If these two be omitted, the number of infants totally blind in the two years is reduced to 9. But these 9 do not represent the total damage done: 8 more have both eyes damaged but are not totally blind, and 16 have suffered injury to one eye. The least unsatisfactory feature of the records is the marked improvement of the results of 1909 over those of 1908.

Year.	Cases.	Both eyes saved.	One eye saved.	Both eyes blind.	No record.
1908.	75	57	8	6	4
1909.	142	120	14	3	5
	217	177	22	9	9

Expressed in terms of eyes :

Year.	Eyes.	Cornea intact.	Cornea damaged more or less.	No record.
1908.	150	116	26	8
1909.	284	250	24	10
	434	366	50	18

This improvement is due chiefly to the fact that cases are sent much earlier than formerly ; but some allowance must be made for the sending of more cases of slight or suspected infection, which swell the number of successes.

If the above 11 blind cases be examined, it will be noticed that the common feature of all but one is the hopeless condition of the eyes when the child is first brought to the hospital. It is gratifying, however, to note that although 186, *i.e.*, 86 per cent. of the total number of cases treated, were local, only four, *i.e.*, less than 2 per cent. blind cases, came from Liverpool ; of the remaining 9, 2 came from the outlying districts, and 5 from towns some distance away.

It may fairly be claimed that these results prove the value of the system of co-operation between the Health Authority and St. Paul's Hospital.

The compulsory notification (of midwives cases) has proved most efficient ; but it is to the credit of the Liverpool midwives that apart from any compulsion, they have shown themselves ready and anxious to do everything in their power for the safe-guarding of the children's eyes. Only one case of blindness was due to the neglect of a Liverpool midwife, or rather handy-woman, who was unregistered and not a member of the Liverpool Trained Midwives Association. She was dealt with by the Health Authority ; *vide supra*, Case 72.

The other lesson which these cases teach is, in my opinion, the difficulty of home treatment, even by doctor and nurse. The impossibility of frequent skilled attention, especially at night, makes home treatment full of danger, and the consequences of failure are so disastrous that it is a question whether when special hospital facilities are available, it is justifiable to run the risks of treatment in the houses of the poor.

I feel that it is impossible to over-emphasize the grave responsibility which rests upon anyone who undertakes the management of a case of ophthalmia neonatorum. A few days of inefficient treatment means permanent and irretrievable blindness for the unfortunate patient.

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## CLINICAL MEMORANDA.

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### BIFOCAL LENSES.

BY

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SENIOR SURGEON TO THE NEWCASTLE EYE INFIRMARY.

BIFOCAL lenses are made in many different ways ; in some " the straight split bifocal " the line dividing the two lenses is horizontal and divides the glass into two nearly equal halves ; in others, " the perfection," a segment is cut out of the distance glass and a similarly shaped reading segment is fitted in its



place ; in "the unifocal" the reading segment is actually ground on the surface of the distance glass ; in others, glass of a different refractive index is fused in to the distance lens, in the most usual form a lune-shaped wafer is cemented on to it. Now, although great credit is due to the optician for making such artistic-looking spectacles, it will be found that they often fail to give satisfaction to their wearers, as some of the essential requisites have not been fulfilled. It will be well to consider what these requirements are.

*Size.*—The smaller the reading segment, the greater will be the field of view for distance, so it has been my universal practice to have the reading segments made very much smaller than usual. No one will care to see a line of print more than 6 inches long without moving his head. Now the distance of the lens from the centre of motility of the eye may be taken to be 27 mm., and if we assume the work to be held at a distance of 13 inches, it is clear that the reading segment need not be wider than  $\frac{6}{13}$  of 27 mm., or say 12·5 mm. Similarly, one need never see clearly more than 4 inches in height without moving one's head, and so the reading segment need not be more than  $\frac{4}{13}$  of 27 mm. or 8·3 mm. in height. The upper margin of the segment should theoretically be a horizontal straight line, and not the convex curve that is usually made. We may say then that the reading segment should be rectangular in shape and need never be more than 9 mm. by 12·5 mm. in size. These dimensions will give the wearer a much greater field of view for distance.

*Position.*—As the eyes converge when reading, the geometrical centre of the reading segment should be about 2·5 mm. to the nasal side of the mid-vertical line of the distance glass, and they should be about 6·5 mm. or 7 mm. below the mid-horizontal line to allow for the depression of the eyes when reading, while the upper margin should be not more than 2 mm. below the centre of the distance glass.

Many people when wearing bifocals complain of a difficulty in going down-stairs, as the steps are indistinctly seen through the reading segments. Such a difficulty is easily avoided by ordering the reading segments not to extend to the bottom of the spectacle frame ; a narrow strip (2 mm. or 3 mm. wide) of the distance glass at the very bottom will enable one to see the next step or two below quite easily. As the ordinary size of a spectacle lens is 37 mm. by 28 mm. it will be seen that this can be done without encroaching on the assigned limits of the reading segment.

*Optical Centre.*—Very frequently it will be found that the most artistic bifocals are badly centred. In cases of anisometropia the results are disastrous. Suppose that R. + 3D and L. + 5·5D. are required for distance ; if normally centred reading segments are cemented on in the appropriate position, it will be found that when the wearer looks through the centres of the segments a hyperphoria is induced, for the left glass being the stronger, acts in such a way that a prism of 1° deviation would be required to counteract its prismatic effect. This state of things may be corrected by ordering the reading segments to be so decentred that the optical centre of the combination should exactly coincide with the geometrical centre of the segment. This may be done by the use of the formula that I have given before :

$$V d = (D + d) 6\cdot5 \text{ mm.}$$

where D and d represent the dioptric strengths of the distance glass and of the segment, where V gives the position of the optical centre of the segment below the centre of the distance glass when 6·5 is the position of the geometrical centre of the segment below the mid-horizontal line.

In the above case for the right eye  $V = \frac{3+3}{3} 6\cdot5 \text{ mm.} = 13 \text{ mm.}$

The optical centre of the wafer must be 13 mm. below the centre of the distance glass or as the wafer is displaced 6.5 mm. downwards, it must be decentred 6.5 mm. downwards. Similarly, the left wafer must be decentred 11.9 mm downwards. Indeed, the actual decentration of the wafers regarded as units is given by the expression  $V = \frac{v}{d} 6.5$  mm. Similarly, the horizontal decentration of the wafers regarded as units is given by the expression  $H = \frac{v}{d} 2.5$  mm. In many cases where the distance glasses are strong the lower margin, of the segment will be thick and prominent. I, personally, have not found any ill result from allowing the wafer belonging to the weaker glass to be normally centred as far as the vertical displacement is concerned, and only giving a vertical decentration to the other wafer based on the difference between the static refraction of the right and left eyes. For instance, no harm would probably result from ordering in the above case for the right segment  $V = 0$ , and for the left segment  $V = \frac{5.3-3}{3} 6.5$  mm. or say 5.4 mm. down. The necessary horizontal decentration should always be given. It is true that in such a case the patient would have to depress his eyes for reading rather more than before, but I have never found this to give rise to inconvenience as long as both eyes were depressed to the same extent. When myopics require bifocals, of course the decentration of the reading segments must be in the reverse direction, *i.e.*, upwards and outwards.

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## THE REFRACTION OF SCHOOL CHILDREN.\*

BY

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THE refraction of school children can be undertaken :—

(1) By existing voluntary institutions staffed by their officers, paid or unpaid.

(2) By establishing special centres known as school clinics, and by appointing school officers at a salary to do the work.

(3) By appointing ophthalmic medical inspectors (school oculists) to refract the children either in the schools or at some convenient centre.

The official mind is disclosed under section D in circular 596, issued by the Board of Education, August 17th, 1908.

Here we read that suitable provision can be made by a local education authority for the prescription and purchase of spectacles, and that in this connection the Board will be prepared to entertain proposals for contributing to the funds of hospitals on terms of adequate advantage, and that contributions are specially desirable in the case of eye hospitals. "It is permissible to include among the conditions of contribution a provision allocating a reasonable remuneration to the medical men working for such institutions."

Hospital refraction was discussed, the agents employed and their necessary limitations, and how this work was presenting increasing difficulties of time and labour to the ophthalmic surgeon (concerned in the efficient organisation

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\* Abstract of paper read on January 6th, 1910, at the Liverpool Medical Institution.

and conduct of his department) through the exigent demands of State-inspected school children.

In this connection it should not be forgotten that :

(1) Refraction formed a necessary and important part of the work of an ophthalmic department, and should be treated as such, and glasses grouped with splints in the practice of orthopædic surgery.

(2) Hospitals were established and are maintained for the treatment of necessitous children, as well as for adults.

(3) Children of parents able to pay a graduated fee are largely driven to abuse this voluntary system through the lack of medical "refractionists" to supply their optical requirements according to their means, and that this state is the result of our present scandalous system of qualifying and post-graduate medical education.

The experience of the writer is that medical practitioners who cannot prescribe spectacles, either "dump" cases into out-patient departments of hospitals, or else refer them to some advertising "ophthalmic optician." It is useless for us to declaim against hospital abuse, or for the British Medical Association to fight against quackery, whilst such iniquitous practices obtain amongst its members ; it is useless for us to damn the optical quack and to conspire to suppress him, until we cast aside our own Pharisaical mantles, and train properly qualified medical men to replace him.

The matter has been further complicated, for the Board of Education have decreed that the refraction of school children and the prescribing of spectacles is medical inspection under the Act. If this be the case, hospital ophthalmic surgeons are now devoting a substantial proportion of their time acting as unpaid ophthalmic medical inspectors for a public authority !

Such a position is as unreasonable in principle as it is indefensible in practice, and ophthalmic surgeons are no longer justified in presenting a public authority with their skill and services for the relief of this public authority's financial burdens. This position is accentuated by our compulsory and free education, and the relation of this to sight in its visual demands, and the possible damage inflicted on the eye through its enforcement.

The refraction of school children having thus become a public charge, it is clear that only when conditions of disease are present does the child revert to the class of patient who can legitimately claim gratuitous treatment at a voluntary institution. "The State, we say, has thus set legal limits to the exploiting of our profession in the name of philanthropy ; the State, we urge, must therefore appoint salaried officers to undertake the command work of the State."

Circular 596 states that school clinics may serve the two purposes of *examination* and *treatment*. Reference is made to refraction under the head of examination, and that this examination may be more expeditiously and thoroughly carried out at a school clinic. The writer has always favoured the appointment of school officers at adequate salaries to undertake the refraction of school children, and for these reasons : (1) there is the least disturbance of school attendance, and least waste of the parents' time ; (2) continuous and valuable records of vision and of spectacles prescribed can be kept in a school medical register ; (3) spectacles can be bought at a lower rate by a public authority than by any voluntary agency ; (4) cases can be followed up with greater care and treatment thereby rendered more certain and effective ; (5) such officers could work in co-operation with the school medical officers, and be utilised to inspect and supervise hygienic arrangements of schools as they related to ophthalmic practice, and be asked to provide and direct when needful special methods of teaching short-sighted children, or be consulted to



give expert advice with regard to the diagnosis and infectivity of doubtful cases of trachoma, etc.

"By way of demonstration, and for a brief period only, I am now arranging (with Liverpool) and conducting (for Bootle) my school refraction at the Liverpool Stanley Hospital, along these lines. "My opinion is that in respect of refraction and the prescribing of spectacles, discharging ears, ringworm, and the care of the teeth, neither private practitioner nor public hospital, as at present organised and staffed, can give sufficient or satisfactory relief for most of the cases requiring it." The writer affirmed that the principles of professional procedure should be elastic and adjustable, not rigid and immutable, sacrosanct, and inviolable, as certain doctrinaires would have us adopt them! "Let us not be hidebound under conditions which demand such delicate adjustments necessarily varying with place and circumstance."

In Birkenhead he has urged that the Children's Hospital would, if properly staffed and equipped, make an excellent clinic for the medical treatment of school children, and has advanced arguments (under twelve heads) which are seemingly irrefutable in support of his contention. An ophthalmic and aural surgeon, as well as a dental surgeon, have already been appointed as a result of his agitation. Worthing has also recently established an ophthalmic department in its hospital, in view of the large number of visual defects which medical inspection is discovering, and the demand for means of suitable treatment which have thereby arisen. With the co-operation of education and hospital committees it would seem that many hospitals might extend their sphere of usefulness in this way, and allow State-supported clinics for school children to be established in their out-patient departments. This is what is contemplated now at the Hampstead General Hospital, and was suggested by the writer months ago as a satisfactory method of dealing with refraction in Liverpool. To create school clinics where the hospitals could be made to serve the same purpose seems to the writer to be the wasteful and unnecessary expenditure of ratepayers' money on bricks and mortar, and house rent, costly, elaborate, and competitive remedial machinery. The writer then reviewed and criticised the action taken by public authorities up to date, commenting on the employment of paid clinical assistants in London, the recognition by the L.C.C. of parental responsibility, and medical charges the parents will have to meet the contribution to hospitals by way of purchase of "recommends" for the treatment of school children by the Education Committee of Sheffield, a practice which was condemned; the adoption of school clinics in Bradford and elsewhere, a system which was approved; the appointment and successful work of the ophthalmic medical inspector in the county of Somerset. He also referred to the operation of a revised Poor-Law medical Service. "It may be that at some future date we shall see developments along this line which will obviate the creation of school clinics and the harnessing of our voluntary hospitals to their subsidising public authorities." In conclusion, the writer referred to his own efforts in securing concerted action by his *confrères*, and to the proposals embodied in a letter addressed to the Chairman of his Hospital in Liverpool.

1. That permission be granted the education authority to use the accommodation and equipment of the out-patient department at the Liverpool Stanley Hospital.

2. That such education authority be asked to pay a rent (or its equivalent) for the privilege of using these premises for the ophthalmic medical inspection of school children.

3. That the education authority be asked to appoint a salaried ophthalmic medical inspector to undertake the work of refraction and prescribing of spectacles.



4. That were such an inspector not the honorary ophthalmic surgeon of this voluntary institution, that this surgeon should be appointed to supervise and supplement the work of such an officer, and be paid an adequate honorarium in return for services thus rendered a public authority.

The writer indicated that it was not without precedent for an ophthalmic surgeon of the staff of a voluntary hospital to receive an honorarium, and said that it mattered not to him "whether the education authority builds or rents the room wherein I handle my lenses," provided his services to school-children as a hospital ophthalmic surgeon were suitably recognised by the State.

And this, after all, was primarily and principally for what he pleaded—State recognition of services rendered to the State by medical citizens of the State!

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## NOVELTIES.

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### THE HYDROPTHALMOSCOPE :

An Instrument for the Examination of the Eye under Water.

BY

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THIS method of examination of the eye is of much greater antiquity than the ophthalmoscope. Mery and La Hire in 1709 observed that the fundus of an eye could be seen in animals under water. Czermak\* in 1851 invented an instrument for the examination of the human eye under water which he named an "Orthoscope," because he could see straight into the eye. He also expresses a hope that it will not be immediately thrown into the "*Akologische Rumpelkammer*."

Professors Arlt and Coccius modified and made more convenient forms of instruments to obtain the same end, but although they all explain the advantages of this method of examination, it has never established itself as a recognised method and the instruments must have gone to the "scientific rubbish heap."

The reason for this is, I think, two-fold: first, that the instruments were not of a sufficiently convenient form to enable them to come into general use; and, secondly, because the "orthoscope," in its pride of enabling one to look straight into the eye, endeavoured to compete with the ophthalmoscope as the method of examination of the fundus of the eye, a contest to which it was unequal. It is nowadays interesting to recall the fact that the early authors describe it as a simpler and "safer" method of examination than that with the ophthalmoscope.

I now revive the method in a more convenient form and as a very humble servant of the ophthalmoscope.

It is, however, a matter of surprise to me that this method of examining an eye should have disappeared so entirely from ophthalmic literature. While in ordinary routine work it may be of but little help or interest, yet in the exceptional case it gives a power of observation that nothing else can give. It is carefully described by Adolf Zander in *The Ophthalmoscope*

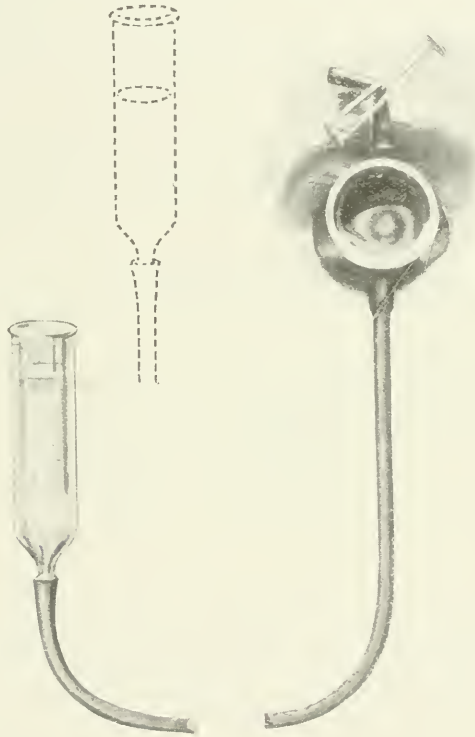
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(\**Prager Vierteljahrsschrift*, Bd. XXXII.)

and in the translation of that work (1864) by Robert Brudenell Carter. Since then I have not found any mention of it except in Norris and Oliver's *System*, where the method is briefly mentioned, and the statement is made that "These instruments are of little interest except from an historical standpoint."

I thought when I invented the instrument that it was *new*, and it is only since then that I have found out what had already been done on the subject.

My improvement of the former types consists mainly in keeping the instrument in position by the means of suction. The former instruments had all to be held in place by the hand, which must have prevented any convenient direct examination; also their method of application must have been difficult.



The diagram shows the instrument in position. It is photographed from an eye in which the lens has been needled, and shows broken-up lens matter, with a loose piece, at the bottom of the anterior chamber.

### Description.

The instrument itself is quite simple and consists of a metal eye cup with a plane glass fitted into it, and two short metal tubes soldered on to its upper and lower surface, to which indiarubber tubes for the supply of water and the exit of air, can be attached.

The supply tube is connected by an indiarubber tube about 3 feet long to a reservoir, which can be raised or lowered. The exit tube has a short piece of indiarubber tube fixed to it which can be firmly closed by a clip.

In order to apply the instrument to the eye, the reservoir should be half filled with hot water and a few drops of glycerine added.

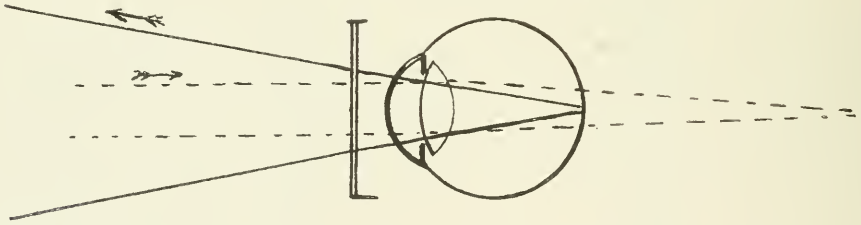
The glycerine can be mixed with the water and the temperature lowered by allowing the water to fill the cup and to run back into the reservoir.

This solution, if really *warm*, is hardly felt by the eye; but the eye is peculiarly sensitive to cold, so that unless the solution is really warm, a sharp contraction of the lids occurs when the water touches the cornea. The reservoir should then be given to the patient to hold in the hand opposite to the eye under observation, and the cup applied to the eye.

The upper edge of the cup should be applied so as to engage and to raise the upper lid. Fit the cup well into the nasal margin of the orbit and gently pull down the lower lid, so as to expose the whole of the cornea. Steady the cup gently with one hand, so as to press it slightly into the orbit, and open the clip with the other hand. Then direct the patient to raise the reservoir above the level of the cup; when the water rises to the upper level of the exit tube, close the clip and direct the patient to lower the reservoir about 9 or 10 inches below the level of the eye. This gives sufficient suction to keep the instrument in place.

The first time the fluid touches the cornea, the patient is apt to squeeze the lids together and either to displace the instrument or to close the lids. The instrument should be left on for about a minute and then applied again, as after the first application, the eye appears to become quite tolerant of the fluid against the cornea.

When the cup is properly applied, the eye remains open, as the cup acts as a lid retractor, so that the eye can be fully examined under its new conditions.



The plane glass in front of the eye takes the place of the cornea, and the refractive index of the water in front of the eye and the aqueous fluid being practically equal, the whole of the corneal refraction and reflection disappears.

Under these altered conditions, rays of light reflected from the fundus of the eye become widely divergent, and hence the fundus can be seen by direct illumination at an angle to the source of light, so that the fundus *can* be seen without the aid of the ophthalmoscope, but in eyes with normal refraction, the image is very small, and the finer details cannot be seen. Except, possibly, for demonstration purposes, the method, therefore, although of interest, has no clinical value in normal cases.

The easy application of the instrument requires a little practice and experience of its habits, but I rarely now meet with a patient to whom it cannot be applied, and although I decorate the patient with a towel round his neck, I rarely spill any water.

At present there are two forms of the instrument on the market, namely, one by Meyrowitz and the other by Allen and Hanbury. The Meyrowitz pattern has its two lateral sides symmetrical, and consequently assumes a more or less oblique position in front of the eye and looks outward. In the majority of patients this does not matter, but on some faces the position is so oblique that it renders the full examination of the fundus a little difficult. The Allen & Hanbury pattern has a vertical, or nearly vertical, nasal side

to the cup and an oblique temporal side, so that the cornea appears in the middle of the glass when the patient looks straight forward. If only one instrument is used, the tubes have to be reversed for the right and left eye, in this pattern.

I have experienced considerably more difficulty in getting these instruments made than their simplicity would seem to warrant.

The rim of the cup should be sufficiently small to fit within the margins of the orbit, and yet wide enough to cover both the internal and the external canthus of the eye. The vertical measurement should be 29 mm., and the transverse 37 mm. Its height should not be less than 15 mm., so as to give room for the projection of the eye. The tubes should be close to the anterior surface and tilted forward, as otherwise they are liable to impinge on the upper or the lower margin of the orbit.

I have tried to have a movable glass fitted, so that the instrument could be more easily cleansed, but it seems impossible to get it air-tight. However, the instruments, as made, can be boiled. The glass is made circular only for reasons of manufacture. A large oval glass is better, but is not so easy to fit so as to make it air-tight.

The tubes are made of a large bore, so that when the instrument is used for a continuous douche they may not get blocked by lymph or discharge which comes away in large flakes.

If, when the instrument is applied, air finds its way in, and the water runs out, the usual place is through the upper tube. The present clip, although the most satisfactory that I have found, does not always close the tube satisfactorily, and requires to be more carefully adjusted.

If the air enters by a series of little bubbles through the lower tube the fault is usually to be found in the adjustment of the indiarubber to the metal tube. It requires to be a tight fit, and the indiarubber should be pushed close against the instrument.

The other common cause of failure in adjustment is that the instrument rests on the external margin of the orbit. With a little tilting and adjustment this can generally be overcome.

Some orbits may be too small to receive the standard size, but they are very few.

In the earlier instruments I had trouble in getting the joint between the glass and the metal air-tight, but the present instruments seem to be sound in that respect. The point of leakage can be detected by a string of bubbles coming from it. A solution of sealing wax in alcohol is convenient for sealing up any little crack.

### Applications.

The action and uses of the hydrophthalmoscope may be considered under two heads:—

1. Those due to the alteration of the refraction and reflection of the eye.
2. Those due to the suction action of the instrument on the eye.

1. *Alterations in Refraction and Reflection of the Eye.*—When the instrument is applied, the water in front of the cornea and the aqueous being practically of the same refractive index, the refractive power of the cornea disappears. The consequence is that parallel rays entering the eye are only focused by the lens at a considerable distance behind the eye and a larger area of the fundus is illuminated.

By the removal of the corneal refraction, the eye is deprived of some 30 dioptries of its refraction. Hence, in order to see the fundus by direct examination



with the ophthalmoscope, a high  $+$  lens must be used, about  $+20D.$ , but varying with the distance of the observer from the eye and the refraction of the patient. In normal cases this method of examination has no advantages over the usual method, but in cases of high myopia it enables one to see every detail of the fundus brilliantly illuminated—*i.e.*, using the ophthalmoscope for direct examination with a moderately high  $+$  lens varying with the degree of myopia.

With the removal of the corneal refraction all astigmatism disappears, and so far I have not discovered any case with lenticular astigmatism. Retinoscopy done under the hydrophthalmoscope does not show any variation in the different axes.

All irregularities of refraction of the cornea, such as conical cornea, corneal facets, and irregular refraction, disappear—also many nebulous corneæ, through which no view of the fundus can be obtained, become much more transparent and often enable one to examine a fundus which could not otherwise be seen.

Some nebulous corneæ appear far less opaque, even to focal light, but they differ widely in this respect, some appearing quite as opaque. It seems to give a basis for diagnosis between real and apparent opacities, *i.e.*, by the removal of the refractive error of the cornea, it renders it clearer and brings into prominence and renders easy of examination its actual opacities.

But perhaps its most startling action is its effect on the hazy, steamy, cornea of glaucoma; in the few cases which I have examined, the steaminess disappeared and the cornea became clear and transparent; also the apparent haziness of the deeper media disappeared, so that a view of the fundus could be obtained, and in one case, indeed, the intra-ocular growth, the cause of the glaucoma, was rendered visible.

The removal of corneal reflection and refraction has many advantages in the examination of the iris and contents of the anterior chamber. In the normal eye under water the iris appears with peculiar sharpness as a perfectly flat curtain set into the sclerotic, and the extreme angle of the anterior chamber becomes visible. A very small hypopyon, which was suspected but could not be seen, thus became plainly visible under the hydrophthalmoscope. The same would apply to small growths or foreign bodies in the extreme angle.

I do not know that the details of the iris are more easily seen than with many other methods at our disposal, but the absence of all corneal reflection enables one very readily to obtain a magnified view of the whole iris at once, and the same circumstances render it comparatively easy to focus for photographic purposes.

I had not expected that the examination of the eye under water would have made any difference to the transparency of the lens and vitreous. It was therefore a surprise to me to find that a clearer view of the fundus could be obtained under water than under normal conditions in these cases.

As an explanation I suggest that the more parallel rays give a better and wider illumination of the fundus, and also that the more diffuse light of the parallel rays does not illuminate the actual opacities so much—just as a brightly illuminated cloud or fog is less transparent than the same cloud in a diffuse light.

In senile lenticonus, where at best a distorted view can be obtained, the fundus shows clear and with scarcely any distortion under water. Some forms of apparent lens haze may be due to some marked error of corneal refraction.

Owing to the diffuse light and absence of corneal refraction, detachment of the retina and intra-ocular growths are more easily illuminated and seen than by direct or focal light.

2. *Suction Action of the Hydrophthalmoscope on the Eye.*—Suction applied over the orbit must affect its several structures in varying degrees.

Its effect on the vascular structures is the most obvious, but the muscles and nerves, and even the globe itself, show evidences of its action.

Taking the various structures in order: the eyelids become slightly swollen, congested, and more vascular. Regular daily application of the appliance leads to slightly increased growth of the lids—and the eyelashes grow longer and thicker. In cases of chronic blepharitis the immediate increase of vascularity appears to be followed by a diminution in the chronic congestion.

The ocular conjunctiva immediately becomes red and congested, and, varying with the degree of suction and time of application, becomes swollen and œdematous. The degree of œdema and injection varies greatly in different people, and, generally speaking, the older the patient the greater the swelling and œdema.

The duration of œdema, etc., after the removal of the instrument, also varies in the same way. The first few applications cause more œdema than the subsequent ones, the vessels appearing to acquire increased tone and power of recovery after a time.

The suction does not, as far as one can tell, have any very definite action on the normal cornea. A prolonged action of the suction produces some mistiness of vision which, I suppose, is due to temporary œdema of its surface, but except that all corneæ appear rather brighter after its application, I have been unable to distinguish any evidences of this.

In cases of vascular corneæ, such as interstitial keratitis, etc., the vessels can be seen to enlarge with the degree of suction.

I have already mentioned the action of the appliance in clearing a glaucomatous hazy cornea, and part of its action, as I have stated, is probably due to the water filling up the interstices of the wrinkled epithelium. Its action, however, is something more than mechanical, for after its removal the cornea remains bright for some time. This, I suppose, is due to a refilling of the lymph spaces.

In some cases the pupil appears to contract under water, but it is not a constant result, and I am uncertain as to whether it is due to the action of the water on the eye or to the results of suction. The question was discussed when the "orthoscope" was invented, and in the early experiments on the eyes of animals under water it was found that the pupil dilated widely; but then as the whole animal appears to have been under water, it doubtless would dilate, as the animal was being drowned.

The pupil under water certainly appears smaller than its fellow, but this is in part an optical appearance, since both the iris and its contained pupil appear smaller owing to the lack of magnification by the cornea.

In some cases, however, the contraction is definite. It is a point which I hope to work out later. At present I consider that the contraction is more frequent in young people than in old—and under homatropine than under cocaine.

The contraction may be due to some engorgement of the iris, due to the suction on and enlargement of the ciliary vessels; but more probably it is due to an over-stimulation of accommodation, since when the instrument is applied to one eye, its fellow appears to have some spasm of accommodation, and objects look clear but very small.

With higher degrees of suction, *i.e.*, lowering the reservoir to 18 in. to 2 ft., a considerable amount of proptosis can be produced and in prominent eyes the globe can be drawn forward until it touches the glass. The proptosis, however, is more apparent than real, since the edges of the hydrophthalmoscope sink into the orbit.

It presumably causes some stretching of the recti muscles.

By its suction action it suggests a wide field for treatment, but, of course, it requires a much longer experience of its action before results can be definitely stated. I have used it in cases of blepharitis, corneal nebulæ (recent and old), corneal ulcers (acute and chronic), and I have been satisfied with its results.

I had hoped that it might benefit cases of serous iritis. The cornea and media appear clearer under it, but I cannot say that it has hastened the recovery of the cases. I have not, however, used it regularly in these cases. Cases of muscular asthenopia appear relieved by it, probably as the result of stretching of the recti muscles.

The instrument can be used as a continuous eye bath in cases of suppuration and purulent conjunctivitis, and in one case in which I used it, the attack, which was an acute one, was apparently cut short in about 12 hours.

### Application of the Instrument as a Continuous Eye-Bath.

For this purpose the short upper tube is replaced by a long one and both are supplied with a regulating clip or stop-cock.

The supply or lower tube should be filled with the irrigating fluid, the stop-cock turned off and the end left in the reservoir, a bottle or basin containing several pints of fluid.

The exit tube should have its stop-cock left open.

The supply reservoir should be a few inches lower than the patient's head, and the end of the discharging tube some six inches lower still.

The eye-cup is then applied to the patient's eye, and if it is desired that the fluid should wash under the upper lid, the cup should be applied so as to draw down the lower lid, leaving the upper one free to move.

If the reservoir is now raised and the stop-cock turned on, the fluid will flow into the cup and through the exit tube. The reservoir can then be lowered, and the cup will remain in position and the fluid continue to flow by syphon action, and the suction will keep the cup applied.

The degree of suction must, however, be carefully regulated, as if too great and applied for a length of time, it causes considerable œdema of lids and conjunctiva.

There is no necessity for the patient to keep *rigidly* still; the tubes allow of some movement, but any considerable alteration in level will cause variations in tension.

So far, although I have used the instrument constantly on people of all ages, I have not experienced any bad results. At first, I was apprehensive of intra-ocular hæmorrhage, but the suction does not appear to have any discernible action on the intra-ocular vessels, and beyond the temporary mistiness of vision and œdema of the conjunctiva, even its prolonged use does not appear to have any drawbacks.

In some cases I have thought that the tension was slightly increased after its use, but the result is not constant nor at all marked in degree.

### Conclusion.

In conclusion, in almost all cases where the examination of an eye presents difficulties, whether in cornea, iris, media, or fundus, its examination under water throws a new light on each structure and gives a wider field of observation. If for no other reason than its power of clearing the cornea in cases of glaucoma and the perfect view of the fundus obtainable in cases of high myopia, its value to the ophthalmic surgeon should be obvious.

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## REVIEWS.

## I.—THE TREPHINE IN THE TREATMENT OF GLAUCOMA.

BY

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THE use of the trephine in the surgical treatment of glaucoma has recently been advocated by Dr. Freeland Fergus<sup>1</sup> and Major R. H. Elliot<sup>2</sup> respectively. The method, however, is by no means new, although the precise application of the method may perhaps be so.

Writing thirty-four years ago, the late Dr. D. Argyll Robertson<sup>3</sup> described what he called "A New Operation for Glaucoma." He drilled a hole, about  $1/12$ th of an inch in diameter, through the upper part of the sclera at or about the junction of the ciliary processes with the choroid. In his last two cases Robertson turned up a flap of conjunctiva with a cataract knife before applying the trephine, and afterwards replaced it over the aperture. Finding that Bowman's trephine was not in all respects well adapted for perforating the sclera, he introduced certain modifications in the instrument. For example, he added to the original trephine a collar of German silver roughened on its outer surface, so as to afford a good hold for the surgeon's



The Sclerotic Trephine. with cap.

fingers: and, furthermore, he modified the cutting end of the trephine, so as to enable perforation of the sclera to be more readily effected, and also to prevent the instrument from passing too deeply into the interior of the eye. The trephine, as modified by Robertson, is shown in the accompanying cut.

By these means Robertson had operated on four patients, and he believed that in the operation we described we possessed "an effectual means of reducing increased intra-ocular tension."\*

At the International Medical Congress at Madrid (Section of Ophthalmology) Dr. Blanco,<sup>4</sup> of Madrid, advocated the removal from all blind and painful eyes of a circle, 4 mm. to 5 mm. in diameter, of sclera, choroid, and retina.

A proposal to revive the operation of trephining the sclera in glaucoma, meanwhile condemned by certain writers and looked on askance by others, was brought up by Dr. Konrad Fröhlich<sup>5</sup> twenty-eight years after Argyll Robertson had described the operation. A triangular flap of conjunctiva, 10 mm. to 12 mm. long, having been reflected from the lower-outer part of the eyeball, a disc of sclera was removed with von Hippel's trephine, provided

\* It should be noted that Argyll Robertson advocated his operation only under special circumstances—as, for example, when iridectomy could not be performed or when it had failed.



with a 5 mm. crown. The choroid and the retina were not touched. On completion of the operation, the conjunctival flap was replaced, and kept in position by means of several sutures. Fröhlich treated by these means five painful eyes blinded by glaucoma, and all made an uncomplicated recovery (with a single exception) in from ten to fourteen days. The failure appears to have been due to the fact that the trephine was inadvertently pushed through all the membranes, whereby profuse extra- and intra-ocular hæmorrhage was brought about. In case of failure, Fröhlich advocated evisceration of the eyeball.

As to the more recent suggestions, those of Fergus<sup>1</sup> and of Elliot,<sup>2</sup> they differ from one another somewhat as regards details, and collectively, again, they also differ from the methods advocated by Robertson, Blanco, and Fröhlich.

Whereas Robertson, Blanco, and Fröhlich removed a disc from the sclera immediately posterior to the ciliary body, both Fergus and Elliot advocate a more anterior position. All the writers named reflect a flap of conjunctiva prior to trephining the sclera.

When we come to examine a little more closely the proposals of Fergus and Elliot, we find a considerable difference in the operations they advocate.

Fergus,<sup>1</sup> after dissecting a large conjunctival flap up to the sclero-corneal margin, removes with the trephine a piece of sclera as near to the cornea as possible. The point of an iris repositor is then passed from the scleral opening into the anterior chamber. The last step is to replace the conjunctival flap, and to stitch it into position. Although Fergus regards his operation as a mere modification of the sclerectomy devised by Lagrange,<sup>6</sup> yet it obviously bears an even closer resemblance to Heine's cyclodialysis, in which the ligamentum pectinatum is broken through by means of a spatula, an incision having first been made through the denuded sclera at a distance of about 5 mm. from the limbus. By this operation, as everybody knows, Heine endeavoured to establish a permanent communication between the anterior chamber and the supra-choroidal space.

Elliot,<sup>2</sup> after reflecting a flap of conjunctiva, applied the crown of a small trephine (2 mm.) as close to the limbus as possible, and aims at allowing the instrument to cut its way into the anterior chamber. The surgeon may then leave the disc of sclera in place, or remove it altogether. Iridectomy may or may not be combined with the trephining. Elliot aims at establishing a permanent filtering cicatrix between the anterior chamber and the sub-conjunctival space. Of fifty patients treated in this way in none did the operation fail to relieve tension. Elliot claims that by his operation even a tyro can accomplish all that Herbert and Lagrange aim at in their operations, the *technique* of which is more difficult.

Both Fröhlich and Fergus lay some stress upon the fact that the sclera can be trephined without general narcosis, as by chloroform.

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## II.—DETACHMENT OF THE RETINA REVIEWED.

BY

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### PART III.

## THE TREATMENT OF RETINAL DETACHMENT.

### INTRODUCTORY.

IN dealing with the literature on the treatment of detachment, it is absolutely necessary to limit my travel to the main road and to avoid by-paths. This literature is simply vast, and just as it was my aim in Part I to give a mere summary of pathological questions, so in the matter of treatment such a summary is all that can be attempted.

There is one point I should like to emphasize before I begin to discuss treatment, namely, that it seems necessary to recognise that besides all ordinary classifications of detachment there is another classification to be made, into the *curable* and the *incurable*. Such a division of the cases would be extremely useful but for the unfortunate fact that there is apparently no means of establishing the class into which any particular case must go. Results, and results only, will determine the matter, for the relatively curable and the relatively incurable seem to be so mixed up together in respect to ætiological classification that it is impossible to separate them. This impossibility of determining with any certainty the prospects of a given case is all the more marked since a rigid definition of "cure" is still to seek, a definition which will not exclude, on the one hand, the great majority of cases, or include, on the other hand, too many which are very doubtful.

We shall find, of course, that various writers have made efforts in the direction of general prognosis upon ætiological grounds, but it is to be feared that most of these efforts are based upon pious opinions rather than upon hard scientific fact. At any rate, it seems sufficient that a generalization should be made, for some case, or series of cases, to arise and upset it. However, "*revenons à nos moutons*."

### I. VIS MEDICATRIX NATURÆ.

#### ON SPONTANEOUS CURE.

Under the heading of *Spontaneous Cures* I am sufficiently sceptical, and at the same time forced by necessity, to include cases where there may have been treatment of a simple nature, such as rest in bed, bandaging, atropin, and so on, but no active medical or surgical therapeutics. The study of spontaneous cures is of as much moment as that of cures following treatment, because the latter is so notoriously ineffective, and because there can be no doubt that many many cases, reported as cures following more or less complicated treatment, would have become cured if left to themselves or treated by rest alone.

It is necessary to clear the ground as to the meaning of the word "cure." Does a cure mean reattachment, or reattachment with complete recovery of

function? Complete recovery of function is rare. Between such complete recovery and mere reattachment with an amaurotic field of vision there are many gradations. Unfortunately, writers are usually very indefinite in their ideas of "cure," some apparently speaking of cure as synonymous simply with reattachment, others stating that visual acuity was "fair," "good," and so on, without condescending to details.

I shall proceed, in the first instance, to speak of "spontaneous cure" as meaning "spontaneous reattachment," with or without recovery of function, and shall afterwards mention particular cases of more or less complete recovery of function.

Even in the early days, writers contradicted each other as to the reality of spontaneous or even of any cure, and have continued to do so ever since. von Graefe<sup>1</sup> was optimistic and pessimistic by turns, and eventually seemed to settle down to the conviction that when reattachment takes place quickly of the part first detached, *restoration of function* may take place. So early as 1861 Van Roosbroek<sup>2</sup> had reached the conclusion that in myopia a detached retina *never becomes reattached* and remains incurable.

Just in the same way, in later years, many authors have reported spontaneous cures: yet Hirschberg<sup>3</sup> in 1879 had not seen a single spontaneous cure out of 113 detachments. Abadie<sup>4</sup> in 1884 denied the permanence of reattachment, and in 1900<sup>5</sup> stated that in 30 years of practice he had never seen a single spontaneous cure. Hartridge and Jessop<sup>6</sup> have practically said the same thing as Abadie. Lagrange<sup>31</sup> in 1899 stated that he had not seen one single myopic detachment cured. Galezowski<sup>34</sup> in 1887 only admitted one spontaneous cure out of 784 cases of detachment. In the face of such statements as the foregoing, the following facts are on record.

**Spontaneous Cure in Myopia.**—Steffan<sup>7</sup> (1866) saw a myope who was completely blind from total detachment; six days later, in the absence of all treatment, vision suddenly returned with only a superior restriction of the field. It is worth noting that Steffan accounted for the spontaneous cure by spontaneous perforation of the retina.

Galezowski<sup>8</sup> (1877) held that detachment in low degrees of myopia is amenable to treatment by rest, etc. He related three cases, but the vision is not definitely stated.

Armaignac's<sup>9</sup> (1884) case belongs to a group of unexpected cures, examples of which have turned up from time to time. A 2.5D. myope, aged 73, suffered a spontaneous detachment, the diagnosis of which was confirmed by other oculists. He would accept no treatment. A year later the condition was unchanged, but later on, after a slight attack of iritis, the detachment disappeared.

Hirschberg<sup>10</sup> (1891) reported one spontaneous cure and two other cases which were cured after simple medical treatment and rest. Donberg<sup>11</sup> (1894) has seen three cases of spontaneous cure of typical myopic detachment.

Kopff's case<sup>12</sup> (1899) is one of a class in which all treatment fails, and then spontaneous cure takes place. A myope of 13D. had a non-traumatic detachment. Medical treatment was of no avail. When treatment had practically ceased, and after the patient had been to a spa, improvement began and progressed to complete reattachment. Panas<sup>27</sup> (1893) has also reported a case of cure after a visit to a spa.

Dor<sup>13</sup> (1899) in discussing his own operative procedure, refers to the fact that Muglich had already collected 136 cases of spontaneous cure from the literature.

Chevallereau<sup>14</sup> (1901) saw a posterior detachment in a myope of 16D become cured—with return of function—in a month, and in absence of any treatment.

Sulzer<sup>15</sup> (1901) had a scholar with 10D. myopia, and an enormous detachment. A few days later, reattachment was complete, but vision remained poor.

Higgins<sup>16</sup> (1902) case is very remarkable. A myope of about 12D. with astigmatism had double detachment. Treatment by rest, vapour baths, and inunction of mercury had no effect. In the course of a single night, after about two months' treatment, the right retina became reattached. The patient woke up "seeing as well as ever." Higgins does not consider that the treatment had to do with the cure.

Hirschberg's case<sup>17</sup> (1907) falls to be added to the list of spontaneous cures after treatment has failed. A myopic lady, after a blow on the right eye, became blind from detachment of the whole upper half of the retina, which presented a tear. Treatment by rest in bed, etc. There was no improvement in six weeks, and the patient was dismissed from treatment. In the course of the following few months, the eye became practically well, except that the upper field was restricted to 40°.

At this point I shall refer to Horstmann's<sup>18</sup> (1898) carefully reported cases of "spontaneous" detachment. In 35 cases kept under observation for years, complete spontaneous cure took place in five. As I understand, all these five were myopic not more than 7·5D. The author explicitly means that there was restoration of function in these five cases. I shall refer again to Horstmann under the heading of prognosis.

**Spontaneous Cure of Detachment in Nephritis of Pregnancy.**—It is impossible to avoid a feeling of certainty that cases of detachment occurring in albuminuria of pregnancy represent a morbid process differing in some essential way from that which exists in myopic and even traumatic non-myopic detachments. At any rate, one is not surprised at reattachment when the renal stress is lessened or removed on delivery. I shall therefore merely refer to the fact that spontaneous cures, so far as direct eye treatment is concerned, have been recorded by v. Graefe<sup>18</sup>, Lotz<sup>19</sup>, Prouff<sup>20</sup>, Adamük<sup>21</sup>, Hann and Knaggs (already referred to, Part I), Guende<sup>22</sup>, Greenwood<sup>23</sup>, and doubtless many others.

**Spontaneous Cure of Traumatic Detachment.**—One of the most interesting and important cases in my notes is that of Fano<sup>24</sup> (1876). A soldier, after a blow on the orbit, developed an inferior detachment. Five years later he returned to Fano, who found that the detachment had entirely disappeared, leaving complete choroidal atrophy at its site. Iritic adhesions were also found at this time, and the author draws the conclusion that a severe irido-choroiditis had resulted in a destruction of the choroid and a soldering down of the retina to the choroid. Vision was equal only to light perception. Landolt<sup>25</sup> (1884) has stated that traumatic detachments, when not too extensive and not accompanied by retinal tear, tend to cure spontaneously. Courserrant confirmed Landolt's views.

Logetschnikow's case of spontaneous cure of traumatic detachment is reported in Part I. of this review.

Dor<sup>26</sup> (1893) has put on record the following really remarkable facts.—A non-myope suffered a traumatic double detachment. He was almost blind. Seven-and-a-half years later, without any special treatment, the "phenomena amended themselves," and vision returned, R. = 1, L. =  $\frac{2}{3}$ . Ophthalmoscopically, cicatrices were found, but the retinæ were reattached. Dor draws the conclusion that retinal function is not abolished so quickly as has been thought.

Even in penetrating wounds of the eyeball with escape of vitreous and detachment of the retina, the latter may cure spontaneously, as in a case reported by Armaignac<sup>28</sup> (1894). A child of nine years had a scleral wound,



loss of vitreous, intra-ocular hæmorrhage, detachment of the retina with scotoma corresponding thereto, and V. = 1. Three weeks later a small pigment spot only remained, no detachment, V. = 3. Eight months later, although complete (traumatic) mydriasis persisted, the vision was perfect.

Knaggs<sup>29</sup> (1897) paper deserves close attention and will be referred to again later on. He reports the following case: two months after rupture of the choroid by *contre-coup* from a bullet wound, retinal detachment appeared. In something over a year the detachment had disappeared and the visual field was full. Matters remained the same a full year later again.

Parent<sup>30</sup> (1899) is responsible for the statement that in traumatic detachment spontaneous cure takes place in half the cases.

Detachment following severe exertion is represented only by two cases in my notes, so far as spontaneous cure is concerned. The cases are those of Brailey<sup>32</sup> (1885) and Fromaget<sup>33</sup> (1900). Brailey's case was the result of coughing; the detachment disappeared in a week. Fromaget's case is one of detachment coming on after severe effort: it was hæmorrhagic. The hæmorrhage was soon absorbed and the retina became reattached.

**Spontaneous Cures of Detachment when associated with cataract.**—Some of the following cases give one food for thought. Is it not usual to be chary of cataract operations where a detached retina behind the cataract is known or suspected?

A myopic patient of Hirschberg<sup>30</sup> (1893), who had lost the sight of one eye through total detachment, developed a partial detachment in the other eye. This was followed by cataract. When the lens was removed the field improved and ophthalmoscopically no detachment could be found.

Cartwright's<sup>36</sup> (1902), case defies classification, but I include it in this group. A man who had had cataract extracted, followed by two capsulotomies (V. corrected =  $\frac{6}{8}$ ) developed a superior detachment (V. reduced to counting fingers) rather more than a year afterwards. Puncture with a Graefe knife had no effect. Nine months later there was nothing to indicate ophthalmoscopically that there had been a detachment. The field was nearly normal and V. =  $\frac{6}{18}$ .

Lange<sup>37</sup> (1903), in two cases of retinal detachment has observed the development of voluminous cataract, deterioration of *central* vision owing to the cataract and return to normal of the *field of vision*. When the cataract was extracted the retina was found reattached and remained so during several years. Lange considers that the increased volume of the lens had to do with the cure of the detachment.

Nicati's<sup>38</sup> (1904) case is somewhat similar. Detachment was succeeded by cataract. In nine years the cataract was complete. Seven years later still it had disappeared, and so had the detachment. The field was normal or nearly so.

**A case of Cure of Detachment by Traumatism.**—The case reported by Remak<sup>44</sup>, (1907) requires a paragraph to itself.

A woman of 57 years had a superior detachment which gradually spread downwards and remained *in statu quo* for one and a half years. At this time, while walking in twilight, and as the result of defective vision, her head came in violent contact with a tree. Following this accident the eye gradually began to improve, and within three months the vision and the fundus were practically normal. It is suggested that the blow may have ruptured the detached retina, and allowed the subretinal fluid to escape into the vitreous, while the replaced retina was kept in position by organizing blood clot.

**Unclassified Cases.**—The cases of Graefe and Berlin have already been referred to. In these, detachment associated with orbital abscess disappeared

when the abscess was cured. Fish's case of frontal sinusitis and detachment which cured after canalization of the sinus will be found on the same page (this Review, see Part I).

The following authors have reported cases of spontaneous cure, but, for one reason or another, the account in my notes is incomplete.

Hosch<sup>39</sup>, two sisters with detachment. In one the disease progressed in spite of treatment. In the other it cured in spite of no treatment at all.

Adamük<sup>40</sup>, in nine cases out of 29, obtained reattachment by rest in bed, atropin, &c. In four of them the cure lasted more than a year.

Fraenkel<sup>41</sup> saw a case in which cure was not obtained by treatment: yet, 11 years afterwards, spontaneous cure took place.

Deutschmann<sup>42</sup> has stated (1903) that he has only seen two or three cases of spontaneous cure in 200 to 300 detachments.

Wernicke<sup>43</sup>, in 1906, published statistics of 422 cases at the Breslau clinique. Out of 36 cured cases, 18 had no treatment at all.

No doubt there are many other cases, the references to which I have not found.

#### ON RECOVERY OF FUNCTION.

It is clear that the number of recorded cases of spontaneous cure is very considerable, provided we are content to consider "cure" to be synonymous with more or less permanent "reattachment." Further, we must undoubtedly add to the list a large proportion of the many cases which, seen early, are treated by some method or other and get better. Such a sceptical attitude is justified by the cases in which reattachment has taken place after active or passive treatment has failed entirely, and by cases in which reattachment has followed some considerable change in the condition of the eyeball (*vide supra*: Detachment Associated with Cataract).

From my study of the literature it seems that we ought to be thus content to call "reattachment" a "cure," temporary or permanent. The number of cases of definitely stated *recovery of function* of which I have notes is very small in comparison with the reported cases of cure by all methods.

It is quite true that a considerable number of my references have only been studied in abstracts, and that in such abstracts details of visual acuity and visual field may have been omitted. It is, however, remarkable that generally speaking these very details are lamentably deficient in original papers as well as in abstracts, and one is forced to conclude, however loudly proclaimed a cure may be by any method, or spontaneously, that that cure amounts only to a reattachment and not to recovery of function unless the visual acuity and the field are definitely stated by the writer. We should be content to admit that, with the exception of an odd case here and there, reattachment is a cure, whether temporary or permanent. We must not forget that detachment of the retina is usually a progressive disease, tending towards totality and blindness. Anything, therefore, in the nature of an arrest of this progress should be considered a cure. If there is return of function so much the better. If this view be taken we are in a better position to appreciate the efforts of the persevering surgeons who have striven to cure detachment by operation. Thus, Abadie,<sup>45</sup> speaking in 1889 of the treatment by iodine injections, remarked—"It is true that we disorganize the layer of rods and cones in the peripheral regions, but it is all to preserve central vision which is so quickly lost in detachment." Other writers also have held this view that disappearance of the subretinal fluid is to be regarded as cure.

I shall now quote a few cases in which recovery of function is guaranteed by the detailed statements of authors. Leaving on one side the earlier writers,

including von Graefe, Haynes Walton, Bowman, and others, at a period when facts had hardly accumulated sufficiently, we may start in 1884, in which year, at one particular meeting of the *Société française d'ophtalmologie*<sup>46</sup>, Pamard pessimistically enquired, what was the use of seeking for reattachment when the portion of retina involved did not recover its function; while Parinaud reported the case of a myope in whom V. was  $\frac{5}{60}$  and field *almost* normal, as the result of operation.

The case reported by Coppez<sup>47</sup>, in 1889, of a 35 year old myope of 15 D. with two months' detachment, and V. =  $\frac{1}{40}$  is quite definite. Eight days after a modified Wolfe's operation there was no trace of detachment. One month later V. =  $\frac{1}{2}$  and field normal. A year later this was maintained.

Horstmann<sup>48</sup>, speaking in 1891 of sixty-one cases of detachment, says that he does not count as cures cases in which the retina remains amaurotic. On this basis he had three definite cures out of the sixty-one cases; and in 1898<sup>49</sup> he again reported his results (see page 103). Dor's phenomenal case<sup>26</sup> has already been referred to (page 103).

The case reported by Fischer<sup>49</sup> (1899) appears to be of great importance, since here a moderate detachment in a moderately myopic individual became cured with simple rest treatment. A 5 D. myope, aged 21, with V. =  $\frac{6}{60}$  had the V. of one eye reduced to  $\frac{1}{60}$  by a shallow, recent looking detachment in the macula region, and outwards and downwards. History of blurred vision for one week. Rest in bed for five weeks, with light bandaging, resulted in restoration of the field. Two years and nine months later the myopia had increased to 6.5 D., the field was full, no detachment was visible, some fine changes in the macula region existed.

In de Schweinitz's traumatic case<sup>50</sup> (1899) in which vision had been reduced to hand movements in a portion of the field, two days in bed brought about reattachment and restoration of the field for white, blue and red.

Nicati's case of detachment, cured by the formation of cataract, has been referred to (p. 104).

Chaillous and Polack<sup>51</sup> asserted in 1906 that in a case of double detachment operated on (scleral puncture) by Parinaud 10 years previously, the acuity and the fields were almost normal in spite of disseminated choroiditis and pigment patches at the site of the detachments.

Leslie Paton<sup>52</sup> in 1908, described an operation which he performed for detachment, the exact cause of which did not seem to be certain. The field was fully restored in three days, and remained so six months later, V. =  $\frac{6}{18}$ . Ophthalmoscopically, there were cicatrices at the site of operation.

Hirschberg's<sup>17</sup> case has already been referred to on p. 103.

Ellis<sup>53</sup> has reported two cases of recovery of function after scleral puncture (repeated), subcutaneous injections of pilocarpine, and subconjunctival injections of salt.

This small list contains all the cases of recovery of function, of which I have satisfactory information. I have notes of many in which "partial recovery," "amelioration," "improvement," and so on are recorded, but consider that when an author does not make a definite statement, that is because he cannot do so truthfully. It is clear that complete recovery of function is a comparatively rare event; that, though rare, it has been vouched for by authors of repute, and that, therefore, just as every French soldier might have a field marshal's baton in his knapsack—and about as seldom—cases of retinal detachment hold possibilities of complete cure, which must never be forgotten. Shall we best promote such a desirable event by passive expectancy, or by active medical or surgical treatment?

(The next article will be concerned mainly with the history of surgical methods of treatment.)

## SPONTANEOUS CURES. RECOVERY OF FUNCTION.

- (1) Graefe, von. — *Archiv für Ophthalm., Bd. I, i, p. 362.*  
 " " " " Bd. II, i, p. 222  
 " " " " Bd. III, ii, p. 394.  
 " " " " Bd. IV, ii, p. 235.  
 (2) van Roosbroeck. — *Annales d'Oculistique*, T. XLV, 1861, p. 130.  
 (3) Hirschberg. — *Archiv. für Augenheilk.*, Bd. VIII. Abstract in *Annales d'Oculist.*, T. LXXXI, 1879, p. 252.  
 (4) Abadie. — *Recueil d'Ophtalmol.*, 1884. Discussion on paper by Galezowski, p. 46.  
 (5) Abadie. — *Société d'Ophtalm. de Paris*, 4 décembre, 1900. Discussion on paper by Chevallereau. Abstract in *Annales d'Oculist.*, T. CXXIV, 1900, p. 464.  
 (6) Hartridge; Jessop. — *Trans. Ophthalm. Soc. U. K.*, 1902. Discussion on paper by Cartwright.  
 (7) Steffan. — *Klin. Monatsbl.*, 1866. Reported in *Annales d'Oculist.*, T. XLVIII, p. 155.  
 (8) Galezowski. — *Gazette Med. de Paris*. No. 29.  
 (9) Armaignac. — See Reference 4.  
 (10) Hirschberg. — *Centralbl. für prakt. Augenheilk.*, 1891, p. 68.  
 (11) Donberg. — *Wjesnik Ophth.*, XI, p. 76. Abstract in *Nagel's Jahresbericht* for 1894, p. 415 of paper by Natanson.  
 (12) Kopff. — *Soc. franç. d'oph.*, 1899, reported in *Annales d'Oculist.*, T. CXXI, 1899.  
 (13) Dor. — *Ninth International Congress of Ophthalmology*, Utrecht 1899. Reported in *Annales d'Oculist.*, T. CXXII, 1899, p. 195.  
 (14) Chevallereau. — See Reference 5.  
 (15) Sulzer. — See Reference 5.  
 (16) Higgins. — *Transactions Ophthalm. Soc., U. K.*, 1902, p. 182.  
 (17) Hirschberg. — *Centralbl. für prakt. Augenheilk.*, März, 1907. Abstract in THE OPHTHALMOSCOPE, February, 1909, p. 124.  
 (18) Graefe. — See Reference 1, No. 2.  
 (19) Lotz. — *Klin. Monatsbl.*, 1889.  
 (20) Prouff. — *Recueil d'Ophtal.*, 1890. Discussion on paper by Galezowski, p. i.  
 (21) Adamuek. — Quoted in *Knapf's Archives of Ophthalmology*, Vol. XX, p. 457, from *Wjesnik Ophthal.*, 1890.  
 (22) Guende. — *Berlin Klin. Wochenschrift*, 27 Januar, 1902. Abstract in *Annales d'Oculist.*, T. CXXIX, 1903, p. 43. Paper by Heilbron.  
 (23) Greenwood. — *Ophthalmology*, January, 1905.  
 (24) Fano. — *Gazette des Hôpitaux*, No. 36.  
 (25) Landolt. — See Reference 9.  
 (26) Dor. — *Société Française d'Ophtal.*, juin, 1893, and *Annales d'Oculist.*, T. CIX, 1893, p. 419.  
 (27) Panas. — Discussion on above paper by Dor.  
 (28) Armaignac. — *Société Française d'Ophtal.* Reported in *Annales d'Oculist.*, T. CXI, 1894, p. 431.  
 (29) Knaggs. — *Transactions Ophthalmological Society of United Kingdom*, 1897, and *Ophthalmic Review*, p. 30.  
 (30) Parent. — *Société Française d'Ophtal.*, mai, 1899. Reported in *Annales d'Oculist.*, T. CXXI, 1899, p. 371. Discussion on paper by de Wecker.  
 (31) Lagrange. — See Reference 30.  
 (32) Brailey. — *Transactions Ophthalmological Society U. K.*, 1885.  
 (33) Fromaget. — *Soc. de Méd. et de Chir. de Bordeaux*, mai, 1900. Abstract in *Annales d'Oculist.*, T. CXXIII, 1900, p. 302, and in *Rev. Générale d'Oph.*, 1901, p. 170.  
 (34) Galezowski. — *Recueil d'Ophtalmologie*, 1888, p. 151.  
 (35) Hirschberg. — *Centralblatt. f. prakt. Augenheilk.*, 1893, S. 111. Abstracts in *Nagel's Jahresbericht* for 1893, S. 341, and *Annales d'Oculist.*, T. CX, 1893, p. 129.  
 (36) Cartwright. — *Transactions Ophthalmological Society U. K.*, 1902.  
 (37) Lange. — *Klin. Monatsbl.*, 1903. Abstracts in *Revue Générale d'Opht.*, 1905, and *Annales d'Oculist.*, T. CXXXI, 1904, p. 152.  
 (38) Nicati. — *La Clinique Ophtalmologique*, février, 1904.  
 (39) Hosch. — *Centralblatt. f. prakt. Augenheilk.*, Oktober., 1887.  
 (40) Adamuek. — *Wjesnik Ophtalmologic.* Abstract in *Nagel's Jahresbericht* for 1892, p. 388.  
 (41) Fraenkel. — *Klinische Monatsbl.*, Mai, 1895. Abstract in *Annales d'Oculistique*, T. CXV, 1896, p. 148.  
 (42) Deutschmann. — Discussion on Uthoff's paper. *Ophthal. Gesellschaft. Heidelberg*, 1903. *Revue générale d'Ophtalm.*, 1903, p. 464.  
 (43) Wernicke. — *Klin. Monatsbl.*, 1906. *Revue générale d'Ophtal.*, 1907, p. 226. *Annales d'Oculist.*, T. CXXXVI, 1906, p. 56.  
 (44) Remak. — *Centralbl. f. prakt. Augenheilk.*, September, 1907. Abstract in THE OPHTHALMOSCOPE, 1908, p. 814.  
 (45) Abadie. — *Annales d'Oculistique*, T. CII, p. 203, 1889.  
 (46) Pamard; Parinaud. — See Reference 4.



- (47) Coppez.—*Clinique Ophthalm. de l'Hôpital St. Jean*. Quoted in *Annales d'Oculist.*, T. CIII, 1890, p. 190.
- (48) Horstmann.—*Ophthalm. Soc. Heidelberg*, September, 1891. Abstracted in *Annales d'Oculist.*, T. CVI, 1891, p. 201.
- (49) Fischer.—*Transactions Ophthalm. Soc. U.K.*, 1899, p. 96.
- (50) de Schweinitz.—Reported in *Annales d'Oculist.*, T. CXXI, 1899, p. 276, from "Société Médicale de Philadelphia."
- (51) Chaillous et Polack.—*Société d'Ophthalm. de Paris*. Reported in *Annales d'Oculist.*, T. CXXXVI, 1906, p. 135.
- (52) Paton.—*Transactions Ophthalm. Soc. U.K.*, 1908, p. 150.
- (53) Ellis.—*Archives of Ophthalmology*, May, 1909.
- (54) Horstmann.—*Archives of Ophthalmology*. Vol. XXVII. 1898.

## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

### I.—ANATOMY AND PHYSIOLOGY.

- (1) Weidlich, J.—On the relations existing between the associated actions of the ciliary muscle and the external muscles of the eye. (Ueber die Associationsverhältnisse der äusseren Augenmuskeln und des ciliar Muskels.) *Arch. f. Augenheilk.*, Bd. LXII, Dezember, 1908, S. 172-175.
- (2) Burdon-Cooper, J.—Entoptic researches with the structure of the vitreous. *Ophthalmic Review*, Dec., 1908.
- (3) Birch-Hirschfeld, A.—Changes in the conjunctiva produced by frequent exposure to rays of short wave length. (Die Veränderungen der Bindehaut nach häufiger Bestrahlung mit kurzwelligem Licht.) *XI Congresso Internazionale di Ottalmologia*, Fascicolo primo, April, 1909, pp. 91-95.
- (4) Teich M.—Experimental researches on the behaviour of animal tissue in the vitreous of the lower animals. (Experimentelle Untersuchungen über das Verhalten animalischer Gewebe im Glaskörper des Thierauges.) *Bericht der Ophthalmologischen Gesellschaft zu Heidelberg*, 1908, p. 219 (Volume published in 1909).
- (5) Birch-Hirschfeld.—An estimate of the injury done to the eye by rays of short wave length. (Zur Beurtheilung der Schädigung des Auges durch Kurzwelliges Licht.) *Zeitschrift für Augenheilkunde*, Mai, 1909.
- (6) Calderaro.—Experimental researches on the excitability of the human optic nerve. (Ricerche sperimentali sulla eccitabilità del nervo ottico nell'uomo.) *La Clinica Oculistica*, June, 1909.
- (7) Pflugk, A. v.—The fixation of the lens of vertebrates especially that of the newborn infant. (Die Fixierung der Wirbeltierlinsen, ins besondere der Linse des neugeborenen Menschen.) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1909.

- (8) Calvert, P.—Some comparisons between the eyes of insects and of man. *Annals of Ophthalmology*, Vol. XVIII, No. 1, p. 48.
- (9) Kuschel, I.—The behaviour of the accommodation apparatus in especial relation to elongation of the axis of the eye. (Das Verhalten des Akkommodations Apparatus bei der Achsenverlängerung des Auges in besonderen.) *Zeitschrift für Augenheilkunde*, Oktober, 1909.
- (10) Pickler.—An attempt to explain one variety of the essential light of the retina. (Ein Versuch eine Form des Eigenlichtes der Netzhaut zu erklären.) *Zeitschrift für Augenheilkunde*, Oktober, 1909.
- (11) Roche.—A clinical argument in favour of Helmholtz's theory of accommodation. (Un argument clinique en faveur de la théorie de l'accommodation de Helmholtz.) *Recueil d'Ophthalmologie*, octobre, 1909.
- (12) Freytag, Gustav.—The refractive index of the lens and fluid media in the cat and rabbit. (Die Brechungsindices der Linse und der flüssigen Augenmedien bei der Katze und beim Kaninchen.) *Archiv f. vergleichende Ophthalmologie*, Vol. I. Pt. 1. p. 61, 1909.
- (13) de Lieto Vollarro, Agostino.—The elastic tissue in the human adult iris, and in the iris of certain species of vertebrates. (Il Tessuto elastico nell'iride dell'uomo adulto e di alcune specie di vertebrati.) *Archiv f. vergleichende Ophthalmologie*, Vol. I, Pt. 1, 1909.
- (14) Nakazawa, Tatsuso.—The behaviour of the pupils in general anæsthesia. (Ueber das Verhalten der Pupillen bei der Inhalationsnarkose.) *Archiv f. vergleichende Ophthalmologie*, Vol. I, Pt. I, p. 20, 1909.
- (15) Zeitzschmann, Otto.—The dilatator pupillæ of the bird. (Der Musculus dilatator pupillæ des Vogels.) *Archiv für vergleichende Ophthalmologie*, Vol. I, Pt. I, p. 1, 1909.

(1) Weidlich endeavours to show with the aid of trigonometry, (1) that the effort of the external muscles of the eyes in converging from a distant to a near object increases more rapidly than the distance diminishes; (2) that the effort of convergence is greater than that of accommodation, and (3) that the effort of accommodation increases more slowly than the distance diminishes.

P. J. HAY.

(2) This is a somewhat elaborate paper in which entoptic phenomena are discussed and studied. The situation of the various vitreous objects seen is determined, and a plate is added illustrating what can be seen in the vitreous under certain conditions of light, etc.

C. DEVEREUX MARSHALL.

(3) Birch-Hirschfeld finds that the rays from a uriol lamp cause photophobia, lacrymation, hyperæmia, chemosis, and a mucoid secretion. Microscopic examination of the conjunctiva shows infiltration of the submucous tissue with polynuclear leucocytes, lymphocytes, and some plasma cells, along with great vascular engorgement. The secretion is characterized by the presence of large numbers of eosinophile cells. The height of the reaction is reached in two or three days, when the changes begin to disappear. If the experiment is repeated before the effect of the first one has had time to pass off, the same results are produced with a shorter exposure. If the experiment is repeated for months, the palpebral conjunctiva becomes milky white, newly-formed

vessels show themselves in the form of numerous pink spots, and here and there the conjunctiva presents a tessellated appearance. The layers of epithelium increase greatly in number, and processes of epithelial cells are sent into the submucous tissues, where they may enclose cyst-like spaces. Plasma cells and lymphocytes abound. In the later stage the epithelium becomes pigmented, the granules of pigment first appearing in the deeper layers, then gradually spreading to the superficial layers, where the pigmentation may become so dense as to obscure all the other features of the condition.

PERCIVAL J. HAY.

(4) **Teich** (Vienna) introduced, under aseptic precautions, pieces of animal tissue, into the vitreous of the rabbit. His experiments were divided into four groups. First he employed sterile, normal, homogeneous (that is, from a rabbit) tissues, including liver, spleen, kidney, muscle, brain, optic nerve, iris, and ciliary body. Then he used the same structures from a different animal (heterogeneous). A third series of experiments were conducted to test the actions of emulsions of these organs, and, finally, inflamed and abnormal tissue was placed in the vitreous.

None of these pieces of tissue was tolerated without inflammatory reaction. Most of them acted as foreign bodies and caused a local inflammation. Some were absorbed, others encapsuled, and pieces of glandular tissue often caused suppuration and were ejected after rupture of the sclera. The emulsions often induced severe local reaction and pus formation. Cataract sometimes appeared, but the lens frequently became transparent again.

Plastic iritis was never seen, but emulsions of glands, especially of kidneys, generally gave rise to severe serous iridocyclitis. Inflamed tissues did not cause more reaction than the other types used. T. HARRISON BUTLER.

(5) **Birch - Hirschfield** (Leipzig).—This somewhat rambling paper discusses and criticises the various opinions and researches upon the action of ultra-violet light and other rays of short wave length upon the eye. The author finds that much of the work which has been done upon the subject is contradictory. He is unable to agree with those who say that ultra-violet light, lightning, and short circuit flashes cause cataract. His experiments upon rabbits do not corroborate this view, and he can find no clinical evidence of its truth. There is, however, no question that ultra-violet rays can cause inflammation of the anterior half of the eye, the so-called "ophthalmia electrica." The waves of shortest length, those under  $300\mu$ , have the most powerful effect, but those between  $300\mu$  and  $400\mu$  are not inert in this respect. The retinal lesions observed after flashes of lightning, and from short circuits, from the dazzling effect of arc lamps, and the mercury vapour lamp, are caused not only by ultra-violet rays, but also by violet and blue light. Fluorescence of the lens is discussed and experiments which have been made to determine its nature are quoted and criticised.

The paper cannot be adequately abstracted, since it is too discursive. It should be read in the original by those specially interested in the subject.

T. HARRISON BUTLER.

(6) For these examinations, **Calderaro** made use of patients in whom from the extent of malignant disease, partial evisceration of the orbit was required. He took away the outer wall of the orbit and the malar bone, and through the breach, exposed the optic nerve still adherent to the seeing globe. For the stimulus, he used electric currents, applied by a small rheophore, with the button covered in sterile gauze, and a needle in other cases, so that the current was limited in action to the optic nerve. In other cases pressure was applied by means of forceps and in others chemical stimulus by application of acetic acid. In none of the experiments did the patient have any sensation of

light, but only of pain. The law of Müller, therefore, does not hold good in the case of the optic nerve; and no stimulus except that received from the retina is able to provoke the peculiar sensation of the nerve. H. GRIMSDALE.

(7) **v. Pflugk's** method of freezing the eye-ball after enucleation by means of carbonic di-oxide and ethylchloride has already led to valuable information as to the shape of the lens of various animals during rest and accommodation. The subject matter of the present paper is the shape of the lens in the newborn. The eyes of five individuals were examined within a very short time after death. The average measurements of the lens were as follows: Length of axis 3.76 mm. Equatorial diameter 6.77 mm. Radius of the anterior curvature 5 mm., of the posterior, 4 mm., the spherical curve of the poles becomes somewhat flatter as the region of the equator is approached. This is especially so at the posterior surface of the lens, which, indeed, appears separated from the rounded equatorial margin by a slight but distinct groove; thus a lenticonus posterior is normally present. It follows from these observations that the shape of the lens in the newborn is far from being spherical. C. MARKUS.

(8) **Calvert**, in an interesting article, after noting the mobility of the human eye, states that the eyes of insects are immobile.

Insect's eyes are either simple or compound, the latter being commonly recognised as eyes. Their surface consists of a network whose meshes are six-sided. Each six-sided mesh is really one surface of a biconvex lens. The immobility of the eyes is compensated for by the relatively large size of the compound eye as compared with the size of the head and also by the convexity. This latter fact permits of each lens axis being directed along a greater number of radii. The field of vision is thereby largely increased without requiring any head movement. The lens material is composed of chitin and is ordinarily dry, thus differing from the human eye with its moist conjunctiva.

No insect eye is specially protected against dust or foreign body. In discussing the powers of accommodation in insects, and after pointing out that whereas (1) in man, mammals, birds, and most reptiles the curvature of the lens is altered in accommodation (the distance of lens from retina remaining the same), and that (2) in some molluscs, bony fishes, amphibians, and some snakes the act of accommodation is brought about by an alteration of the distance between lens and retina, Calvert states that in insects accommodation is rendered unnecessary by the thickness of the retinal layer which permits images of external objects, at different distances, to fall within that layer. From some experiments made by Plateau, it was shown that "the simple eyes of insects have almost no utility and that the compound eyes do not give distinct perception of form, although giving impressions resulting from shadows and reflections"; consequently when visiting flowers, odours and masses of colour serve as guides. J. WHARTON.

(9) **Kuschel** (Ludenchoid).—This paper does not lend itself to abstraction. T. HARRISON BUTLER.

(10) **Pickler** (Klagenfurt) deduces from his *post-prandial* sensations an explanation of the essential light of the retina. Lying down to sleep after a heavy lunch, which followed physical and mental exertion, he noticed, after his lids had been closed for some time, a deep violet circle in the centre of the field of vision. Its size varied, at times it filled the whole field, only to contract again to the original size. As he watched, the violet spot became surrounded by a dirty green border. This green ring expanded, and at the same time the violet spot contracted till ultimately the violet appearance was entirely replaced by dirty yellow-green. Then a violet ring appeared round the



periphery of the green spot, and ultimately replaced it. This alternation corresponded in time to the acts of respiration. This, then, is the after-dinner observation, a phenomenon which must at some time have been noticed by most individuals. Pickler thinks, for his explanation does not go farther than this, that this appearance is the same as that caused by the passage of a constant current through the eye, and he suggests that the essential light of the retina is associated with the current of rest in the retina. When the author suffers from migraine, he notices a scintillating scotoma on one side of his eye, on the other he observes half the coloured spot, a hemianopic essential light.

T. HARRISON BUTLER.

(11) **Roche** estimates that complete section of the zonule of Zinn would make no difference to the refraction of the eye if Tscherning's theory of accommodation were correct, whereas according to Helmholtz's theory, the absence of traction of the zonule would increase the refractive power of the eye by the whole amount of accommodative power of the eye. The author's case of double congenital dislocation of the lens lends support to Helmholtz's view. The vision in this case was as follows :—

Right eye :	Without a glass	...	...	...	=	1/30
	In the aphakic area, c. +10D.	...	...	...	=	1/15
	In the lenticular area c. -13D.	...	...	...	=	1/15
Left eye :	Without a glass	...	...	...	=	1/30
	In the aphakic area c. +11D.	...	...	...	=	1/12
	In the lenticular area c. -13D.	...	...	...	=	1/30

In the aphakic area the refraction was what is generally found in normal eyes after removal of the lens, whereas retinoscopy showed a myopia of 13D. in the area occupied by the lens. This amount of myopia corresponds to the amount of accommodative power in a child aged 11 years (the age of the patient) and must be regarded as the result of the increased sphericity of the lens, due to the absence of the zonule and its traction. That such a change of refraction is not shown in all cases of dislocation of the lens is probably due to the fact that a few fibres of the zonule remain intact and are adequate to maintain sufficient traction on the lens to prevent its change of shape.

J. JAMESON EVANS.

(12) This paper is a continuation of **Freytag's** researches on the refractive index of the lens and media in man and the higher animals. In these he found, among other results, that the cortical refractive index is greater at the poles than at the equator of the lens; that the index of the nucleus becomes greater with increasing age in many animals as well as in man; that the index of the aqueous is slightly higher than that of the vitreous; that during life no appreciable change occurs in the index of the fluid media. In the cat and rabbit the index of the aqueous and vitreous is lower and more variable than in the species formerly examined, but in other respects the results were similar. Freytag also gives a number "indicial curves," *i.e.*, graphic representations of the variations of refraction in the different layers of the lens. In the human cataractous lens the increase proceeds not by even, but by step-like, gradations from the surface to the centre. Such step-like gradations also occur in the cat and rabbit.

GEORGE COATS.

(13) After a brief review of previous work in the same field, de Lieto **Vollarro** gives the result of his own researches on the occurrence of elastic tissue in the iris of man, the domestic mammals, birds, and fishes. In the human iris he finds scanty fibres in the posterior layers, in the region of the sphincter, and between the sphincter and dilatator. The iris of the domestic mammals, as compared with that of man, consists of a much coarser fibrous

tissue, among which many irregularly disposed elastic fibres occur; as in the human iris, the fibres are radially arranged in the posterior layers. The iris of birds is very rich in elastic tissue; in the posterior layers it forms a network with radially elongated meshes; in the sphincter region the meshes are concentric with the pupil; many fibres are also found among the bundles of the dilatator and sphincter, and in the stroma elsewhere. In the iris of fishes elastic fibres are very numerous and are connected with a rich elastic plexus at the base of the ciliary body; here again the posterior layers are radial. The sphincter is accompanied by a bundle of concentrically disposed fibres.

GEORGE COATS.

(14) The behaviour of the pupil in general anæsthesia has been fairly well worked out in the case of man. **Nakazawa** has conducted a series of observations on the animals commonly used in experimental research. He gives full details in a number of rather indigestible tables, and arrives at the following results.—In the stage of excitement, dilatation and slight diminution of the light reaction occurred in all the animals; in the stage of narcosis the light reaction was abolished, and the pupil rather smaller than during excitation. Miosis occurs in the narcotic stage in man and the dog, not in the cat and rabbit. During recovery miosis is usual in man; in the animals mentioned a medium pupil is commoner. In the frog no change occurs in the pupil during narcosis.

GEORGE COATS.

(15) It is well known that in the iris of the bird transversely striated voluntary muscle fibres occur, some of which have a circular, and some a radial arrangement. Contraction of the pupil has naturally been attributed to the circular fibres, and dilatation to the radial. The number of radial fibres, however, varies very greatly in different species of birds, without any corresponding variation in the activity of the pupil. Moreover, both the circular and the radial bundles are supplied by the same nerve, and must therefore presumably act together. On these grounds **Zeitzeismann** believes that the radial fibres have no dilatator function, but rather stiffen up the iris, and give the muscles of the ciliary body, and especially the tensor chorioideæ, a better point of fixation. He ascribes dilatation to a layer of involuntary muscle corresponding exactly with the dilatator of the mammalian eye, and like it closely associated with, and probably derived from, the anterior layer of the pigment epithelium. This layer shows even fewer structural details than the mammalian dilatator, and is usually completely hidden by pigment. A similar layer has been described in the amphibian iris by Grynfeldt.

GEORGE COATS.

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## II.—HEMIANOPSIA.

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- (1) **Possek, R.**—A case of traumatic cortical hemianopsia. (Ein von kortikaler Hemianopsie nach einem Trauma.) *Zeitschr. f. Augenheilk., Ergänzungsheft*, 1905.
- (1A) **Voorhoeve, N.**—A case of bitemporal hemianopsia. (Een geval van bitemporale hemianopsie.) *Ned. Tydschrift voor Geneeskunde*, 1908, No. 8.
- (2) **Ginsberg, S., and Dessauer, P.**—Purulent cerebro-spinal (epidemic) meningitis, with hemianopia and hemianopic pupil reaction. (Meningitis cerebro-spinalis acuta purulenta (epidemica?) mit Hemianopsie und hemianopischer Pupillenreaktion.) *Centralbl. f. prak. Augenheilk.*, Februar, 1909.

- (3) Behr, Carl.—Contribution to the topical diagnosis of hemianopsia. (Zur topischen Diagnose der Hemianopsie.) von Graefe's *Archiv f. Ophthalmologie*, Bd. LXX., Heft 2, April 13, 1909.
- (4) Stanculeanu, G.—On a case of bitemporal hemianopsia. (Sur un cas d'hémianopsie bitemporale.) *Archives d'Ophthalmologie*, mai, 1909.
- (5) Tooth, H. H.—A clinical lecture on a case of homonymous hemianopsia with unusual sensory symptoms. *Clinical Journal*, August 12th, 1909.

(1) **Possek** recounts a case of a man who received a severe blow on the occipital region which caused a depressed fracture. This was operated upon, and following the operation, blindness set in, which gradually recovered until in each eye  $V. = \frac{6}{12}$ , but the fields showed a hemianopsia, temporal in the left, and nasal in the right, macular vision being retained in both eyes. A. LEVY.

(1A) **Voorhoeve's** patient showed the following symptoms, indicative of a tumour of the anterior part of the chiasma.—Bitemporal hemianopsia, with the limits of the field going through the point of fixation, intense headache, hemianopic reaction of the pupils, low pulse rate, vomiting and high tension of the liquor cerebro-spinalis. Examination with X-rays showed, almost with certainty, enlargement of the sella turcica. The patient was observed for some months, his condition remaining the same, and was then lost sight of. In his fields a remarkable abnormality was noted, *i.e.*, the so-called "superfluous part of the field" (that small part of the field which in hemianopsia still exists on the other side of the vertical line of separation of the blinded and the normal half) was found to be present only for the periphery, not for the central part of the field. G. F. ROCHAT.

(2) A most interesting case of eye complications in cerebro-spinal meningitis is recounted by **Ginsberg** and **Dessauer**, of Berlin. The patient, a female, aged 40, was admitted on the 14th May, 1907, with symptoms of meningitis of two weeks' duration. The disease was fairly severe, and on the 23rd May, 20 c.cm. of anti-meningococcus serum were injected without any result. This was repeated on the 25th May, and next day the temperature became normal and patient made an uninterrupted recovery, and she was discharged on 12th July. She was again examined in October, 1908, and found to be perfectly healthy as far as her general health was concerned. As regards the eye symptoms, immediately after her admission, 16th May, 1907, the left pupil was noted as being larger than the right. On the 29th May, the vision in the right eye had become worse than the left. On the 15th June, the right eye could only recognise large objects in a small portion of the outer half of the field, and in the left eye there was a deficiency of the outer half of the field of vision, and this was the condition when she left hospital on the 12th July, 1907. On the 29th July, there was slight divergent strabismus, and the right pupil reaction weaker than the left. Right disc grey-white, margin normal, vessels narrowed. Left disc, temporal quadrant slightly pale. V. R. fingers at 15 cm. excentric. V. L. c. + 2.0 = 0.2.

There was therefore a left homonymous diplopia with a large central scotoma in the right eye. The condition improved somewhat, and on August 27th, 1907, there was obtained an extraordinarily well-marked hemianopic pupil reflex. Convergence reaction normal. This reflex lasted for four weeks, and then gradually disappeared, and, finally, the pupils only contracted to light directly incident on the macular region. On 2nd December the right pupil did not react to light directly, but reacted well consensually, while the left did not react consensually, but reacted well to direct light.

Convergence reaction good. The central scotoma in the right gradually disappeared, and vision improved, the fields of vision gradually became hemianopic, and have remained unchanged up to the present. Pupillary reactions ultimately occurred only to light entering the pupil from directly in front.

In considering the site of the lesion, it is clear that it must have affected the right optic tract, and in view of the hemianopic pupil reflex, it must be situated in front of the primary optic nerve centre. The seat of the affection is therefore most likely to have been in front, and to the left of the chiasma. The nature of the lesion is more doubtful—haemorrhage or thrombosis, or possibly an encephalitis. Affections of the optic tract in meningitis are very rare, and in this case no other basal affection was obvious; therefore, probably in addition to the meningitis, a localised encephalomeningitis also occurred.

A. LEVY.

(3) Extensive and numerous as the contributions to the knowledge of hemianopsia have recently been, there are still some points which remain obscure. Behr tries in this important paper, which is based upon the clinical material of the clinic of Kiel, to elucidate several important questions, especially as regards the relative importance of hemianopic pupillary reaction and of Wilbrand's prism test\* for the localisation of the injury, on the nature and origin of the overlapping macular field, the nature of the colour-perception centre, the localisation of optic memory, and also of the extent to which the optic nerve fibres undergo atrophy in case of central causation. His principal results are as follows:—(1) Hemianopic reaction of the pupil is always present in tractus hemianopsia; (2) the deficiency of Wilbrand's prism reaction also proves the tractus seat; (3) atrophy of the O.D. is seen in intra-cerebral localisation, only if the hemianopsia has been acquired in earliest infancy; it is most marked on the homonymous side. In these cases the eye with the larger peripheral field takes the lead in the visual act and the other one becomes more or less amblyopic; (4) the "overlapping" or "excess" field is merely confined to the macular region; it is rarely absent in intra-cerebral hemianopsia, but also mostly present in tractus hemianopsia. Central vision and saving of the macular are inter-dependent; if the latter is wanting, the V. is reduced to  $\frac{1}{2}$  or  $\frac{1}{3}$ ; (5) difference of pupil and lid-aperture (wider on side of hemianopsia) if combined with homonymous hemianopsia, may possibly confirm the diagnosis of tractus hemianopsia; (6) there is no necessity to assume an isolated colour-perception centre; colour-hemianopsia has no topical diagnostic importance. The centre for optic memory lies within one hemisphere in either the occipital or the temporal lobe, mostly on left side; (7) The nasal half the retina is possessed of a larger amount of pupillo-motor activity.

R. GRUBER.

(4) Stanculeanu, of Bucarest, reports a case of hemianopsia, which under specific treatment ended in partial recovery. He believes that the condition was caused by pressure upon the chiasma by an exostosis of syphilitic origin arising from the sella turcica. The patient was a girl, aged eighteen years. A radiogram is appended to the communication. SYDNEY STEPHENSON.

(5) In this lecture Tooth, of London, gives full details of a case in which hemianopsia was an important symptom. Thermo-anæsthesia also existed.

\* NOTE.—*Wilbrand's prism test*.—The patient is requested to fix a white point on a large grey surface, 30 cm. distant. Then, suddenly, both eyes are covered with equal prisms, apex towards side of the hemianopic defect. The refracting angle must be twice the angle of the remaining active portion round the point of fixation, or more, so that the image is thrown upon the hemianopic portion. The test presupposes the existence of a subcortical link between retina and eye movements near the corpus geniculatum externum, similar to the pupil-reflex. Should the prism test be positive, this proves that the optical connection between retina and corpus geniculatum externum remains uninjured. In any interruption of this connection, the involuntary associated eye movement will be wanting.



A large part of the lecture is occupied in the rehearsal of the physiological anatomy of the brain bearing upon the symptoms, and the conclusion is reached "that a thrombotic lesion of the post-cerebral might explain the symptoms, but perhaps not so satisfactorily as a similar lesion of the anterior choroid."

ERNEST THOMSON.

### III.—A THEORY OF VISION.

Edridge-Green, F. W.—The theory of vision. *Lancet*, 2nd October, 1909.

Edridge-Green's paper, read before the section of ophthalmology at the Sixteenth International Medical Congress at Budapest, and so well received at that Congress, is published in the *Lancet*. Scientific papers of this type are notoriously difficult to abstract in such a way as to be intelligible, and therefore one need make no excuse for transcribing the excellent summary provided by the *Lancet's* editorial of the same date.

"When a ray of light impinges on the retina it liberates the visual purple from the rods, which then diffuses itself into the fluid surrounding the outer segments of the cones. In the fovea there is no visual purple until this diffusion takes place. This substance is photo-chemical and a photograph is thus formed. The rods are connected only with the formation and distribution of the visual purple, and not with the conveyance of light impulses to the brain. The decomposition of visual purple by light chemically stimulates the ends of the cones, and a visual impulse is set up and conveyed through the optic nerve to the brain. Thus a colour-blind person has an eye which in no way differs from the eye of a normal-sighted individual, but the reason that the former does not distinguish between rays of light whose difference in wave-length is obvious to the latter is because his brain centres are not sufficiently developed to appreciate so small a difference \* \* \* \* \*. In regard to the evolution of the colour sense, Dr. Edridge-Green suggests that to the least developed sense of sight all nature appeared black and white of various shades, as is seen in an ordinary photograph, but as more cells were added to the visual centres rays of low refrangibility were seen as red, and of high refrangibility as violet, and a tinge of these two colours was visible at each end of the spectrum, with a large neutral band between. These colours gradually approached until they met. The eye then began to be able to distinguish something at the point of juncture where the rays most differed in wave-length from the two ends, and these were termed green. Yellow next became interpolated between the red and green, blue between the green and violet, orange between the red and yellow, until some eyes became capable of seeing a distinct colour, indigo, between the blue and violet. As development progresses, more colours may perhaps become visible \* \* \* \* \*. As a retrograde condition, we find examples of all the conditions from total colour blindness to full normal vision existing at the present time \* \* \* \* \*"

## OPHTHALMOLOGICAL INSTRUMENTS.

MADE BY

E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK

## THE EDRIDGE-GREEN COLOUR PERCEPTION LAMP.

## DIRECTIONS FOR USE.

**Construction.**—The lantern consists of four discs: three carrying seven coloured glasses, and one carrying seven modifying glasses. Each disc has a clear aperture. The other mechanical details are, an electric or oil lamp with projecting accessories, a diaphragm for diminishing the size of the light projected, handles for moving the discs, and the indicator showing the colour or modifier in use.

**Diaphragm.**—This is graduated in respect to three apertures to represent a  $5\frac{1}{2}$  inch railway signal bullseye at 600, 800 and 1,000 yards respectively when the test is made at 20 feet.

**Colours.**—Three of the discs contain:—

Clear.	Pure Green.	Blue.	Red 1.
Yellow	Standard Green.	Purple.	Red 2.

One disc contains the following modifying glasses:—

Clear.	Ribbed Glass.	Neutral 2.	Neutral 4
Ground Glass	Neutral 1	Neutral 3	Neutral 5

**Method of using.**—The colours are brought successively into view by moving one or more of the handles to position, denoting the colour or modifier in use, on the scale at the top of the lantern.

**Degrees of colour perception.**—The classification is as follows:—

Heptachromic appreciating in the spectrum—

		red	orange	yellow	green	blue	indigo	violet
Hexachromic	„	red	orange	yellow	green	blue	...	violet
Pentachromic	„	red	...	yellow	green	blue	.....	violet
Tetrachromic	„	red	.....	yellow	green	...	...	violet
Trichromic	„	red	...	.....	green	...	.....	violet
Dichromic	„	red	.....	.....	.....	.....	.....	violet
Monochromic	„	light and shade only.						

A dichromic may vary with more or less gray patch between red and violet, red shortening, violet shortening alone or in combination with above.

**Notes on Testing.**—Show each colour in one disc and the modifying glasses in combination and *obtain a name* for each. Colour ignorance demands rejection.

The candidate should be seated at a distance of 15 or 20 feet from the lantern. He should be asked to name the colour of the light produced by a coloured glass alone or in combination with the modifying glasses, or the coloured glasses. A candidate should be rejected (1) if he call the red green, or the green red, in any circumstances. (2) If he call the white light in any circumstances red or green, or *vice versa*. (3) If he call the red green or white lights black, in any circumstances. A candidate who makes mistakes other than those mentioned above, should be put through a very searching examination.

The examiner should on no account conduct the examination on any regular plan because the candidate, anxious to pass, finds out from persons who have already passed, the order and method of the examination; and so though colour blind might obtain a certificate. Any one of the slides may be first shown and the candidate required to name the colour of the light. The following will serve as an example of the method to be employed in testing a candidate. The standard red slide having been placed in the lantern, the candidate is required to name its colour. Then a blue or green slide may be substituted, then one of the neutral, ground, or ribbed glass slides should be inserted; not the slightest intimation being given to the candidate of the nature of the slide. He should be asked to name, on describing the light, and the answer if incorrect, together with his other replies, carefully recorded. The other slides may then be shown; a combination of the neutral, ground, ribbed, and coloured glasses being used at intervals. Twenty correct answers may be considered sufficient for a pass certificate.

One incorrect answer to any of the questions under test A suffices for rejection. The examinee giving a doubtful answer to question 6 in test A or to any of the questions in tests B, C and D should be subjected to a very searching examination. The procedure should be varied in every case. Questions with doubtful answers should be repeated after an interval of other questions. Answers should on no account be commented upon.

A form of questions with answers making a series of hypothetical cases can be obtained in blank for answers and results in pads of 100, price 2s. 6d. each.

Each lantern is compared with a standard, and, if required, a certificate by Dr. Edridge-Green can be had with the instrument at an extra cost of one guinea.

Reference should be made for further details to "Colour Blindness and Colour Perception," by F. W. Edridge-Green, M.D., F.R.C.S., International Scientific Series, Kegan Paul, Trench, Trubner & Co., Ltd., London.

## IV.—STATISTICS OF BLINDNESS.

- (1) Scholz, K.—The causes and distribution of blindness in Hungary. (*Ursachen und Verbreitung der Blindheit in Ungarn.*) *Zeitschrift für Augenheilkunde*, Mai, 1908.
- (2) Dufour, Auguste.—International statistics of blindness and the Federal Census of 1910. (*Statistique internationale des aveugles et recensement fédéral de 1910.*) *Rev. Méd. de la Suisse Romande*, 20 décembre, 1909.

(1) Scholz, of Budapest, has tabulated the causes of blindness in Hungary, taking his material from the records of the University *Klinik* at Budapest. The results obtained do not differ materially from those elicited elsewhere, except, as might be expected, that trachoma is responsible for a larger proportion than would be the case in western Europe.

T. HARRISON BUTLER.

(2) Statistics have shown that there are actually in Europe 310,000 blind persons, of whom one half—perhaps even two-thirds—should never have been allowed to become blind. In 1907 an international committee was appointed at Hamburg with the idea of unifying the returns of blindness now periodically collected by all important countries. Sub-committees were appointed for each country, that for Switzerland including Drs. Paly and Guillaume, and the writer of the present communication, **Auguste Dufour**, of Lausanne. At a general meeting held at Prague in October, 1908, many of the recommendations of the Swiss sub-committee were adopted. It is to be hoped that the measures then recommended will be adopted in the countries where a general census will be taken in the year 1910. Steps towards that end, despite the indifference of some of the authorities concerned, are being taken in Switzerland.

SYDNEY STEPHENSON.

## V.—THE SIGHT OF GENERAL PARALYTICS.

Rodiet and Pansier.—Vision of general paralytics. (*La vision des paralytiques généraux.*) *Recueil d'Ophthalmologie*, octobre, 1909.

Opinions seem to differ widely as to the frequency, extent, and diagnostic and prognostic significance of impairment of sight, disturbances of visual fields for white and colours, and ophthalmoscopic changes in cases of general paralysis.

With regard to the contraction of the visual fields observed in the early stages of general paralysis of the insane, it is necessary to distinguish between those cases in which it is found associated with optic atrophy and those in which no ophthalmoscopic changes are noticeable.

Rodiet and Pansier did not meet with any of the former. They found that out of 40 cases of general paralysis examined in the early stages 4 showed diminution of the field of vision. In the first case the retraction was more extensive on the right side and more marked for red. In the second case orange could not be perceived, and there was retraction of the field for blue. In the third there was slight retraction of the field for blue in each eye. In the fourth case the retraction was concentric in both eyes.



Scotomata, when present in general paralysis of the insane, are generally associated with some ocular trouble. Three cases are reported by the authors. Two of these were associated with alcoholism and syphilis and one with lead poisoning. Ophthalmic migraine, often of the supraorbital type, sometimes associated with scintillating scotoma, has been regarded as of considerable diagnostic importance in the early stages of general paralysis of the insane, but owing to its varied causes, it cannot be counted of much value. As ophthalmoscopic changes are generally absent from these cases of visual disturbance, it has been assumed that they are of cortical origin. Galezowski, however, has described changes in the disc—hyperæmia, anæmia, atrophy—and peri-vascular sclerosis.

Papillary atrophy has been reported in from 5 per cent. to 10 per cent. of cases examined by various observers. Histologically, some of these showed marked hypertrophy of the sheath and septa, producing compression of the nerve fibres, whose myelin sheaths become destroyed. There was also marked thickening of the vessel walls. Similar changes have been found in the oculomotor nerves, but in neither case can they be definitely regarded as due to general paralysis (and not to some intoxicating agent, such as alcohol). Hyperplasia of the connective and neuroglial tissues of the retina, with disappearance of the ganglionic cells in the advanced stages, have been reported by Magnan, Raviart, and Caudron. They also found similar hyperplastic changes in the optic nerve.

The very rare cases in which the amblyopia begins with the central scotoma with loss of perception for green and a contracted field for red are exactly analogous to cases of toxic axial retro-ocular neuritis.

The amblyopia of general paralytics is therefore due to a chronic peripheral retro-ocular neuritis, which inevitably leads to optic atrophy.

The authors sum up the matter as follows.—Visual troubles in general paralytics are not frequent and progress slowly. They are often due to alcoholic, tobacco, or lead poisoning, which may be at the root of the disease. When the visual disturbances are associated with lesions of the fundus, the latter are variable and scarcely characteristic. Optic atrophy, when present, generally appears when the disease is established and can be seen to evolve from the neuritic stage to that of atrophy, as the nerve fibres become compressed by the hyperplastic sclerosis of the connective tissue.

J. JAMESON EVANS.

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## VI.—GLAUCOMA.

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- (1) Lawford, J. B.—Examples of hereditary primary glaucoma. *Royal London Ophthalmic Hospital Reports*, Vol. XVII, Part 1.
- (2) Henderson, Thomson.—A preliminary communication on the pathogenesis of glaucoma and the rationale of treatment. *Ophthalmic Review*, September, 1907.
- (3) Maggi.—The relative frequency of primary glaucoma in the clinic at Pisa. (*La frequenza del glaucoma primario nella clinica di Pisa*). *La Clinica Oculistica*, Giugno, 1907.
- (4) de Vries, W. M.—On the changes of the retina and the optic nerve in glaucoma. (*Over de veranderingen aan de oogzenuw en het netvlies by Glaucoma*.) *Nederlandsch Tydschrift voor Geneeskunde* 1908.

- (5) Bradbourne, A. A.—Herpes Zoster frontalis associated with glaucoma. *Lancet*, November 28th, 1908.
- (6) Kuschel, J.—Acute glaucoma, the culmination of the glaucomatous predisposition. (Das Glaucoma acutum als der höchste Steigerungsgrad der glaukomatösen Disposition.) *Zeitschrift für Augenheilkunde*, Ergänzungsheft, 1908.
- (7) Kuschel, J.—Functional defects in glaucoma a consequence of alterations of equilibrium in senile degeneration of the architecture of the eye. Die functions störungen beim Glaukom als Folgen der Gleichgewichts veränderungen in der senil degenerierten Architecture des Auges.) *Zeitschrift für Augenheilkunde*, November, 1908.
- (8) Lawson, Arnold. —A case of bilateral congenital glaucoma treated by iridectomy after the method of Lagrange. *Transactions Ophthalmological Society U.K.*, 3rd fascic., 1909.

(1) The number of cases of glaucoma recorded as having occurred in more than one member of a childship, or in more than one member of a family, is not large, although such are well-known to exist. von Graefe emphasized the importance of inheritance in the causation of glaucoma. He stated that "the influence of inheritance seems to predominate in typical inflammatory glaucoma which often attacks several members of the same family, and is transmitted from generation to generation. The simple form has appeared to me far less frequently hereditary, but my data are too scanty for any decision on this point." The records since von Graefe's time seem to show that hereditary glaucoma is more likely to assume the chronic than the acute form.

In this paper **Lawford**, of London, reproduces six families in pedigree figures with others quoted in the text. As all the cases occurred in private practice and in educated people, the statements concerning individuals not seen may be considered as reliable as any information can be which is obtained from non-medical witnesses. The conclusions come to from a study of these cases is as given above.

C. DEVEREUX MARSHALL.

(2) This is a paper which was read at the Annual Meeting of the British Medical Association in 1907. **Henderson's** views have been so often heard, and his papers so often published, that most people are acquainted with his ideas, which differ considerably from those generally accepted. He explains the increase of tension in glaucoma as being due to closure of the interspaces of the pectinate ligament, in consequence of the fibrosis of the cells of its connective tissue stroma, and the continued formation of a homogeneous membrane around these fibrous bundles leading to the endothelial cells being first brought into contact, and then welding together the fibrous structure. He does not consider the obstruction due to the peripheral anterior synechie, so frequently met with in this condition, at all important, for this is altogether secondary.

He has pointed out that the iris contains numerous crypts, through which filtration of fluid is possible; myotics stretch these crypts, and so increase their power, while mydriatics close them. When iridectomy is performed no sign of cicatrising ever appears on the cut surfaces of the iris, no matter how long a time may have elapsed since the operation; this, therefore, permanently opens some of these filtering crypts if the operation be performed before the whole iris is atrophied, and has altogether lost its function; if it has done so, iridectomy is useless. He does not consider that a peripheral

iridectomy is any more efficacious than one in which a large stump of iris is left behind at its base. Diagrams accompany the communication.

C. DEVEREUX MARSHALL.

(3) This is a very careful examination of the records of the Pisa clinic and presents records of 64,729 patients, of whom 618 were glaucomatous. The results obtained by **Maggi** are similar to those of other observers.

HAROLD GRIMSDALE.

(4) **de Vries**, as the result of a series of microscopic examinations, has formed an opinion on the causes of the cupping of the disc in glaucoma somewhat different from the view generally accepted. He thinks some of the changes regularly to be observed in eyes excised for absolute glaucoma, cannot be explained in the usual way. For instance, the lacunar atrophy of the optic nerve cannot be the result of high tension. And how are we to explain that into the excavation of the disc a portion of the retina is so often drawn? This cannot possibly be the result of increased tension alone. These considerations led de Vries to bring forward the following hypothesis.—In glaucoma the anterior outlet for the lymph is obstructed, this may be considered as nowadays the generally adopted view. The lymph will try to escape through the posterior way—that is, through the perivascular sheaths of the vessels of the optic nerve. But this lymph in glaucoma is not an indifferent one. It has toxic properties, and thus it can be understood that the optic nerve becomes altered. In fact, it often shows cellular infiltration and after some time it will show local degeneration of the nerve fibres; in this way the lacunæ in the substance of the optic nerve are explained. In places where marked cellular infiltration has taken place, there will be formation of connective tissue afterwards. This has a marked tendency to shrinking, and draws the retina into the excavation.

So long as the posterior outlet is sufficiently patent, there will not be any increased tension, and, clinically, there will be nothing but a cupping of the disc. Then we have before us the condition of glaucoma simplex. But in the course of time the inflammatory process in the optic nerve will lead to closure of this way and the glaucoma changes into an acute one with high tension. It cannot be denied that de Vries's theory gives a good explanation of many hitherto obscure points in the pathological anatomy of glaucoma.

G. F. ROCHAT.

(6 and 7) The articles on this subject by **Kuschel**, of Luderscheid, now form quite a literature by themselves. These two papers are the seventh and eighth which he has recently contributed to the *Zeitschrift*. They remind us that "of making many books there is no end, and much study is a weariness of the flesh." There is apparently no muzzling order in Germany.

T. HARRISON BUTLER.

(8) **Lawson's** case of congenital glaucoma gave rise to an interesting discussion on the surgical treatment of glaucoma. The patient, a man aged 34 years, had eyes above average in size, large corneæ, deep anterior chambers, a horizontal corneal opacity, high tension, and typical glaucomatous cupping, R.V. =  $\frac{6}{18}$  2 letters, with correction, L.V. fingers at two feet. Right field considerably contracted; left field reduced to a minute area round the fixation point. Lagrange's operation was performed on each eye, and resulted in a gradual lowering of tension, a slight improvement in the fields and in vision: R.V. =  $\frac{6}{18}$ , L.V. =  $\frac{2}{60}$ . Patient and operator satisfied.

*Discussion.*—**Weeks** (Philadelphia) admitted that the immediate result was excellent. He had himself done 30 or 40 operations of the kind, but his anticipation of permanent lowering of tension had not been entirely realized. Eventually cicatrization took place and connective tissue filled the gap.

**Brooksbank James** (London) had not done Lagrange's operation. **Treacher Collins** (London) had not done it either. He considered the object of the operation to be faulty. He agreed with Weeks that it was impossible to produce a real filtration scar unless there was an entanglement of a fold of iris. He thought it was dangerous to do this on purpose, on account of the risk of infection. **Odillo Maher** (Sydney, N.S.W.) said he performed an operation for chronic glaucoma which gave a small cystoid cicatrix. His experience was that the risk of infection was so small that it was outweighed by the benefits derived from a cystoid cicatrix. With the latter opinion **Cross** (Clifton) agreed in a modified manner. As a rule, prolapse of iris should be avoided, but the result in many cases of simple glaucoma was so disastrous that one was justified in running the risk of a prolapsing iris. He considered that the new departure, by removing a piece of sclerotic and aiming more definitely at a filtration scar, was the right way to attack such cases.

ERNEST THOMSON.

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## VII.—THE PATHOGENY OF PHLYCTENULÆ.

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**Weekers, L.**—The new pathogeny of ocular phlyctenulæ. (*Nouvelle pathogénie des phlyctènes oculaires.*) *Académie de Médecine de Belgique*, October 30, 1909, ref. in *La Clinique*, 11 décembre, 1909, p. 975.

The diagnosis of tuberculosis has undergone a remarkable evolution during the last few years. Its early diagnosis can now be determined by the reactions, local and general, set up by tuberculin. **Weekers**, of Liège, was the first to apply the cuti-reaction in the search for tuberculosis among patients affected with phlyctenular conjunctivitis. He observed 156 children, aged less than 15 years, and 58 adults. All these patients were subjected to complete somatic examination, and at the same time their hereditary antecedents were investigated. The cuti-reaction offers no danger in children. It may be adopted among out-patients. Its value as a means of diagnosing tuberculosis is now admitted by everybody. The reaction was positive in 91 per cent. of the children and in 55 per cent. of the adults. **Weekers** also found evidences of tuberculosis in a large number of these patients. Basing his views upon the absence of tubercle bacilli from the phlyctenules, upon the reactions determined by tuberculin in the ophthalmo-reaction, and upon the aggravation of phlyctenular conjunctivitis produced by the injection of tuberculin, the author admits that ocular phlyctenulæ are produced by soluble products of tuberculous origin circulating in the blood-stream. The phlyctenules are analogous to certain cutaneous tuberculides.

**Weekers** examines also into the relationships subsisting between scrofulosis and tuberculosis. If phlyctenulæ, which are looked upon as one of the characteristic symptoms of scrofulosis, are to be connected with tuberculosis, then scrofulosis becomes a latent attenuated tuberculosis. From this conclusion **Weekers** draws considerations dealing with the subject of the treatment of children affected with phlyctenular disease of the eye.

SYDNEY STEPHENSON.

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## VIII.—THE BACTERIOLOGY OF DACRYOCYSTITIS.

Casali, A.—The bacteriology of dacryocystitis. (*La batteriologia delle dacriocistiti.*) *Annali di Ottalmologia*, Vol. XXXVIII (1909), fasc 1-2.

After a *résumé* of all former works dealing with the bacteriology of dacryocystitis, Casali, of Florence, describes the results obtained by him from the examination of sixty cases of dacryocystitis, *viz.*, fifty chronic and ten acute. The secretion was collected direct from the sac after incision of the wall at the commencement of the treatment. The virulence of the various micro-organisms was tested by the subcutaneous and intra-peritoneal injection of the organisms in rabbits, guinea-pigs, and white mice. All cases examined, together with the result of microscopical preparations, cultures, and trials of virulence are included in tables, from which it may be concluded :

1st. *In chronic or catarrhal or purulent dacryocystitis :*

Pneumococcus, 39 times (20 times in pure culture).

Streptococci, 10 times (3 times pure).

Bacterium coli, 7 times (once pure).

Staphylococcus: aureus 6 times, albus 4 times, and citreus 3 times.

Xerosis bacillus, 3 times.

Friedländer's diplobacillus, twice.

2nd. *In acute dacryocystitis :*

Streptococcus, 10 times (8 times pure).

Staphylococcus: aureus once, albus once.

Xerosis bacillus, once.

Virulence was, in general, but slightly marked, whether in the cases with catarrhal secretion or in cases with obviously purulent secretion.

The pneumococcus is, then, the organism of chronic dacryocystitis, and at the moment of exacerbations it yields place to the streptococcus. Staphylococci are also very common in the chronic forms, but their virulence is so slightly marked that they may almost be regarded as saprophytes. In the acute forms the staphylococcus associated with the streptococcus may be found; it is rare to find very virulent staphylococci in phlegmonous dacryocystitis (Selenkowski and Widmark). As common also in the chronic forms seems to be the streptococcus, but that organism is especially the characteristic of the acute forms, alone or associated with other microbes, especially with staphylococci. Even in the phlegmonous forms, according to Casali, the experimental virulence of the streptococci is moderate. The bacterium coli is relatively rare, and its presence seems to be accidental (among infants and old persons, patients ill-cared for). The Friedländer diplobacillus is also rare, although it may be often found in patients who suffer from ozoena. Without speaking of saprophytes (the most frequent of which are the *B. xerosis* and the *M. candidans*), we must recognize as exceptional findings the *B. pyocyaneus* (Terson and Cuénod), the gonococcus (Antonelli in congenital dacryocystitis without purulent conjunctivitis), *B. subtilis*, *proteus vulgaris*, and the *pyogenes fetidus* (Ricchi), *actinomyces* (Ricchi, Mitwalsky), the bacillus of Morve (Gourfein), the Morax-Axenfeld diplobacillus (Muller, Brons), the Koch-Weeks' bacillus (Griffith), Pfeiffer's bacillus (Muller, Brons, Axenfeld), and the *B. funduliformis* (Veillon and Morax).

Casali's work, which is excellent from every point of view, concludes with a bibliography.

A. ANTONELLI.

## IX.—A NEW SIGN OF HEREDITARY SYPHILIS.

Antonelli, A. —Naso-lacrymal pathology in hereditary syphilis. *Pathologie naso-lacrymale dans la syphilis héréditaire.* *XVIIe Congrès International*, Budapest, 1909, and *Archives d'Ophthalmologie*, octobre, 1909.

Antonelli, of Paris, describes anew a sign of hereditary syphilis first brought forward by him at a meeting of the Paris Ophthalmological Society in June, 1902. It has been found by him to occur with extreme frequency in the subjects of hereditary syphilis. The sign essentially consists in a prominence, often better felt than seen, of the free edge, and especially of the tubercle or spine of the nasal bone on each side lying more or less on a level with the skin. It is, in fact, a developmental exostosis of the border and spine of the nasal bone, and is accompanied by atrophy or thinning of the periosteum and teguments of the region. Sometimes, the crest of the os unguis is also prominent. The stigma, according to Antonelli's experience, is very pronounced in heredito-syphilitics whose subcutaneous venous system of the head is obvious, and whose root of the nose is flattened. At the same time the latter condition is not indispensable, since the prominence described may often be felt when the nose is properly developed. Indeed, the prominence represents a stigma of syphilis which is much commoner than depressed bridge. It is a rudimentary sign perhaps, but none the less valuable on that account, inasmuch as it is almost constant, and is easy to recognise. The skeleton of the nose does not attain complete development until adolescence. The nasal bones are a favourite site for the developmental osteo-periostitis so common among the subjects of heredo-syphilis, partly on account of its tardy development and partly on account of the complicated evolution of the region. When these disturbances are marked they lead to the classical stigmata of the naso-facial aspect of hereditary syphilis ("saddle" bridge, etc.), but when they are less pronounced to the rudimentary stigma of exostosis of the free border and of the spine of the bones proper to the nose.

As regards the lacrymal apparatus properly so-called, an inflammation of the lacrymal gland, due to hereditary syphilis, appears to be extremely rare (Wood). On the contrary, inflammation of the lacrymal sac is common enough, either during infancy or even congenitally, or later, and it may be followed by all the usual consequences, such as phlegimonous inflammation of the lacrymal sac, pre- or peri-dacryocystitis, fistula, obstruction, lacrymation, and so forth. This dacryocystitis may be autochthonous, primary (malformations, specific osteo-periostitis of the naso-lacrymal duct) or secondary to nasal manifestations (rhinitis), so frequent and so early among the subjects of hereditary syphilis.

SYDNEY STEPHENSON.

## X.—TWO RARE DISEASES OF THE EYELIDS.

Gutmann, A.—Two rare diseases of the eyelids. *Zwei seltene Augenlid-Erkrankungen.* *Zeitschrift für Augenheilkunde*, June, 1909.

Hæmorrhages in the skin of the lids are observed in two forms, flat extensive patches or sugillations, and petechiæ. Sugillations are generally associated with hæmorrhages into the palpebral and bulbar conjunctiva. They are caused by direct violence or appear after fractures of the orbital bone and the base of the skull. Petechiæ, which are less frequently observed,

accompany scurvy, purpura, and other manifestations of the hæmorrhagic diathesis.

**Gutmann**, of Berlin, describes two cases which are quite different from any yet published.

In the first, a twenty year old anæmic girl, petechial hæmorrhages appeared on her eyelids after an attack of sudden vomiting. The upper and lower lids of both eyes were sown, as it were, with circular, discrete petechiæ. Examination of the blood showed the presence of extreme secondary anæmia. The hæmorrhages were soon absorbed. The second example of petechial hæmorrhages was in a child, aged 9, who had been thrashed by her father. Both lids were sprinkled with small hæmorrhages. This child was also anæmic. In the first case there were patches of subconjunctival hæmorrhage, shown in the plate which accompanies the communication.

The second rare disease was in a patient who came up with six to eight small nodes in his lower lid the size of the cherry stone; they were slightly red, and could be moved a little over the skin of the lid. The nodules were arranged in two rows, close together, but each was separated from the other by an area of normal skin. The surface was not excoriated. After over two months, no change took place in the nodes, so one was excised and examined microscopically, as no diagnosis could be made, either by ophthalmologist or dermatologist. The microscope showed that the disease was a "tuberculide" of the lid of a kind so far not described. The lungs were normal, and von Pirquet's reaction was absolutely negative. The condition was probably a toxi-tuberculide caused, not by tubercle bacilli, but by tuberculo-toxine. A very similar disease is found on the hands of persons engaged in handling infected dead bodies, the so-called "corpse-tubercle" or *tuberculosis verucosa cutis*.

T. HARRISON BUTLER.

## XI.—QUININE AMBLYOPIA.

- (1) **Cargill, L. V.**—Quinine amblyopia from a single dose of quinine sulphate, 5i. *Trans. Ophthal. Society U.K.*, Vol. XXIX, Fasc. 2, 1909, p. 152.
- (2) **Hennicke (Gera-Reuss).**—Short casuistic communications from my practice. (*Kleine kasuistische Mitteilungen aus der Praxis.*) *Wochenschrift f. Therapie u. Hygiene des Auges*, 5th and 16th September, 1909.
- (3) **Behse, T.**—A case of quinine blindness. *Finska Läkarsällsk. Handl.*, April, 1908, p. 35, ref. in *Annales d'Oculistique*, décembre, 1909, p. 485.

(1) In the case reported by **Cargill**, of London, severe tinnitus, deafness, dizziness, and amblyopia came on the morning after a woman, aged 28 years, had taken one drachm of quinine. Nine days later, R.V.=6/12 and L.V.=6/18, pupils widely dilated and motionless to light or convergence, optic discs pale, retinal vessels "thready." Slight improvement took place during the period of about two months during which the patient's case was followed.

SYDNEY STEPHENSON.

(2) **Hennicke's** first case is of double perforation of the eyeball by iron-splinter. A ragged corneal wound, traumatic cataract, and positive sideroscopic result confirmed the history of the eye having been struck some hours earlier by a chip from a chisel. The magnet failed to remove it. On enucleation four days later, a small iron splinter was found in the episcleral

tissue near the macula. A large subconjunctival hæmorrhage at the external canthus might have suggested the double perforation.

A case of quinine amblyopia occurred in a patient under treatment for malaria. When the eye symptoms began, the dose had been increased, under the belief that the visual disturbance was due to the malaria. The pupils were narrow and the reflex to light was lost. Withdrawal of the quinine, with cold baths and douches, lead to a complete recovery, in spite of the pallor of the optic nerves and contracted arteries. Vision still preserved two years later.

*Operation in buphthalmos.*—A child of five with advanced buphthalmos, sub-luxated lenses, and deeply excavated optic nerves, was brought by the parents for operation, notwithstanding contrary advice from a number of surgeons. An iridectomy in the right eye, which was already blind (?), led to the recovery of sight sufficient for the recognition of large objects. An operation was then undertaken in the left eye in which there was slight eccentric vision, at the same time the luxated lens was removed with the spoon. The wound was progressing well when on the seventh day a hæmorrhage saturating the dressings occurred after the child had been eating fruit surreptitiously provided. Two weeks later while the eye was quieting the parents removed the patient. Indirect information stated both eyes subsequently became blind but without inflammation.

A case of hereditary optic nerve atrophy in a man of 45 years of age completes a series of interesting and well written cases. Vision equalled counting of fingers at two meters. The sight had been poor since early childhood. Treatment unavailing.

W. B. INGLIS POLLOCK.

(3) **Behse's** case was in a woman, aged 35 years, in whom after the absorption of three *cachets* of quinine, of dose unknown, there supervened noises in the ears and very violent vertigo (March 14th, 1906). On the following day both eyes were totally blind. The fundi were dull, and the retinal arteries very narrow. The urine contained neither sugar nor albumin. Treatment was by rest in bed and the administration of potassium iodide. Towards the end of March there was slight perception of light. On April 2nd, projection was almost correct; the pupils reacted normally. On April 16th, the patient began to distinguish objects in the room. Two days later, R.V. = 5/10 with *plus* 4.5, L.V. = 5/15 with *plus* 4.5. The visual field was very contracted, and the optic discs were atrophic. The woman was discharged.

In October, 1906, the patient returned with complaints of "clouds" before the eyes. The visual acuity was as in the month of April. Strychnine was injected. In November, 1907, a fresh series of injections was made. The visual field remained without alteration, and the optic discs were in a state of white atrophy. The state was the same in January, 1908. E. S.

## XII.—REGIONAL ANALGESIA OF THE EYELIDS AND THE LACRYMAL APPARATUS.

Chevrier, L. and Cantonnet, A.—Regional analgesia in the surgery of the eyelids and of the lacrymal apparatus. (*L'analgésie régionale dans la chirurgie des paupières et de l'appareil lacrymal.*) *Gazette des Hôpitaux*, 7 décembre, 1909.

Chevrier and Cantonnet, of Paris, voice the advantages possessed by regional analgesia, which involves the nerve supply of a more or less distant



area, over local anæsthesia, which infiltrates the region upon which an operation is to be performed. They insist upon two points: first, the extent of the tissues that may be rendered analgesic by a relatively small dose of the anæsthetic; and, secondly, the fact that regional analgesia does not give rise to any deformity likely to interfere with the proper performance of an operation upon such delicate parts as the eyelids.

With regard to the agent employed, the authors inject a 1 per cent. solution of novocaine, to every 2 c.c. of which is added a drop of adrenaline, 1 : 1,000. Cocaine, 0·5 per cent., stovaine, 1 per cent., or alypine, however, may be employed equally as well.



Fig. 1.

In order that the novocaine may have time to penetrate the nerve fully, it becomes necessary to wait for twelve to fifteen minutes after making the injection, and it is of importance to note that the conjunctiva retains its sensibility to pain much longer than the skin. Before operation is commenced, therefore, the sensibility to pain (not to touch) of the conjunctiva should be ascertained by touching the exposed mucous membrane with a sharp point, as the needle of the syringe. In making the injection, the piston should be pushed at the same time as the needle, so that a stream of novocaine precedes, as it were, the instrument. The latter, then, is never brought into direct contact with the tissues. After the fluid has been injected, slight massage of the parts should be practised by means of a tampon of cotton-wool.

A condition indispensable for inducing analgesia is that the solution employed should be brought into intimate contact with the nerve upon which it is desired to act. To adopt the method with success, therefore, the operator must understand exactly the position of the nerves, as well as the regions supplied by them. These anatomical considerations are treated at some length by Chevrier and Cantonnet, but it must suffice if we give in this place merely the *technique* adopted by them.

1. The Eyelids.—In order to render the eyelids analgesic, injections must be made at three points, so as to reach the external and internal frontal nerves and the ascending branches of the infra-orbital nerve. (a) The first injection is made above and a little internal to the trochlea, the position of which is represented by a cross in Figure 1. The needle is passed below the edge of the orbit and along the roof of the orbit, passing above and somewhat external to the trochlea. The needle is plunged in for a distance of from 1.5 c. to 2 cm. When the desired point is reached, 1 or 2 c.c. of the liquid

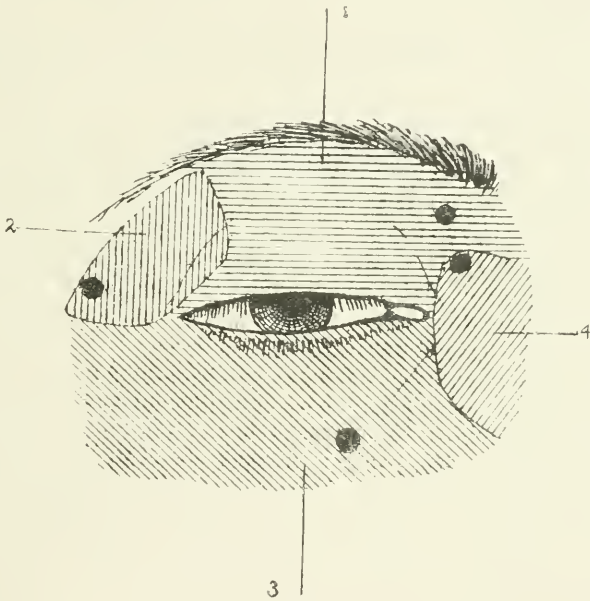


Fig. 2.

are injected. (b) The needle is inserted at a point where a line prolonging the external commissure of the eyelids would meet the osseous wall of the orbit (see Figure 1). The needle is then passed to a depth of 3 to 4 cm., and the anæsthetic is deposited between the periosteum and the lacrymal gland, so as to reach the terminal branches of the lacrymal nerve. (c) The third injection (see Figure 1) is made into the immediate vicinity of the infra-orbital foramen or even, if necessary, into the foramen itself.

The various points brought forward in this abstract will be rendered clearer if the reader will study Figure 2, which shows graphically the regions anesthetised by each injection. It shows, also, the number and the site of the injections that should be made according as to whether the operation is to be performed on both eyelids, on one alone, or on the outer or the inner angle of the eye. In the Figure, 1 represents the area rendered analgesic by the supra-trochlear injection (external and internal frontal nerves); 2 the area

affected by the external (lacrymal) injection ; 3 the area anæsthetized by the infra-orbital injection ; and 4 the parts affected by the infra-trochlear injection (external nasal nerve).

Chevrier and Cantonnet have used the method of regional anæsthesia described above in twenty operations undertaken in the ophthalmological clinique of the Hôtel-Dieu, Paris. The cases included 7 operations for trachoma, 2 divisions of lacrymal stricture, 1 trichiasis, 2 entropions, 5 chalazions, 1 tarsorrhaphy, 1 extirpation of the lacrymal sac, and 1 destruction of the sac by cautery.

SYDNEY STEPHENSON.

### XIII.—GYRATE CHOROIDAL ATROPHY.

**Wernicke, O.—Gyrate atrophy of the choroid and retina.** (*Atrophia gyrata choroidæ et retinæ.*) *Arch. f. Augenheilk.*, Bd. LXII, Dezember, 1908, p. 239-245.

**Wernicke** records a typical case of a rare disease described by Fuchs under the name of "gyrate atrophy of the choroid." The patient was a young man, aged 22, who had had poor vision since a boy. He was the youngest of a family of ten, all of whom enjoyed good sight with the exception of one sister. She had always seen badly and had been operated on for cataract in both eyes. She was also supposed to have a congenital defect at the back of her eyes. Wernicke's patient saw fairly well in daylight, but at night his vision was so poor that he dared not go out by himself. On examination, he showed right anterior and posterior polar cataract, and a left homogeneous white cataract. Discission was performed in the left eye and the lens evacuated. The right fundus presented a circular zone of atrophy of the choroid and retina which sent tongue-shaped processes into a narrow ring of normal tissue remaining round the disc. When first seen this ring contained a small white atrophic area. Gradually, the latter grew larger and in the course of three months merged into the adjoining atrophic zone and isolated some choroidal tissue in the shape of a stellate figure. Such stellate figures were pretty numerous round the ring of normal fundus, but became fewer towards the periphery, where they ultimately disappeared. They sent out processes which formed a network, in the meshes of which there was a deposit of pigment. Near the outer margin of the atrophic zone this pigment was so dense as to obscure the view of the other structures. The choroidal vessels had disappeared with the exception of a few of the larger ones, and those did not show any pathological changes. The retinal vessels seemed to be normal in size and appearance. In the left eye the process of atrophy had advanced up to the margin of the disc. On the temporal side there still remained an irregular pink area of small vessels, with a stellate figure in the centre. Otherwise the atrophic zone appeared quite white. Near the periphery there was a deposit of pigment, as in the other eye. The retinal vessels were narrowed, but could be followed out for a considerable distance. R.V. c. — 4.5 D. sph.  $\ominus$  — 2.5 D. cyl. ax.  $105^{\circ} = \frac{1}{10}$ . L.V. fingers at 30cm. c. — 7 D. sph. = fingers at 2 m. Concentric limitation of both fields.

PERCIVAL J. HAY.

#### XIV.—GONORRHOEAL AFFECTIONS OF THE CONJUNCTIVA AND CORNEA.

- (1) Posey, Wm. Campbell.—Report of a case of keratitis, probably due to metastatic gonorrhœa. *Ophthalmic Record*, May, 1909.
- (2) Stieren, Edward.—Gonorrhœal ocular metastasis. *Ophthalmic Record*, July, 1909.
- (3) McKee, Hanford.—Metastatic gonorrhœal conjunctivitis: the demonstration of the gonococcus in smear and culture. *Ophthalmology*, Vol. V., July, 1909.
- (4) Heerfordt, C. F.—On "Subconjunctivitis epibulbaris gonorrhœica." (Ueber "Subconjunctivitis epibulbaris gonorrhœica.") von Graefe's *Archiv f. Ophthalmologie*, Bd. LXXII, Heft 2, Oktober 26, 1909.
- (5) Waldstein, E.—On the histology of conjunctivitis gonorrhœica. (Zür Histologie der conjunctivitis gonorrhœica.) von Graefe's *Archiv f. Ophthalmologie*, Bd. LXXII, Heft 2, Oktober 26, 1909.

(1) A man, aged 28 years, suffered from a vesicular condition grafted upon an old macula corneæ. Urethritis was also present. Gonococci were found in smears both from the urethra and also from the inflamed cornea. The history was that twelve years previously the patient had contracted gonorrhœa, and that the same eye had then been inflamed. There had been no rheumatism. But since the first attack of gonorrhœa there had been more or less discharge from the urethra, and the eye had been suffused on several occasions. Posey, of Philadelphia, suggests that the keratitis may have been due to metastatic gonorrhœa.

SYDNEY STEPHENSON.

(2) Stieren, of Pittsburg, reports three instances of metastatic inflammation of the conjunctiva in men aged 42, 22, and 35 years, who recovered in one week, ten days, and two weeks respectively. No joint complications in two of the patients. Examination of the conjunctival secretion for gonococci was negative in the two cases where it was made. Notes are added of a case of ophthalmia neonatorum, complicated with arthritis of both knees, and at a later period with (?) endocarditis. What is certain is that the child became subject to attacks of cyanosis and died suddenly in her sleep when about eight months' old.

SYDNEY STEPHENSON.

(3) The characteristics of metastatic gonorrhœal conjunctivitis are that both eyes are inflamed with more or less muco-purulent discharge, that it occurs in males, tends to recur, and may remain a conjunctivitis, or may involve other parts of the eye. It is mild as compared with the exogenous type. It is apt to be associated with a cessation of the urethral discharge, and followed by the development of gonorrhœal rheumatism. The absence of the gonococcus from the discharge used to be taken as differentiating this form from that due to conjunctival infection, but this criterion is now an unreliable guide. Three theories are advanced to explain the occurrence of the disease—(1) that it is due to the action of circulating gonotoxin (Axenfeld): (2) that it is due to the ordinary pyogenic bacteria, the ground being prepared by the gonotoxin (mixed infection): (3) that it is a true metastasis.

The last of these is the view supported by McKee, of Montreal, on the basis of the case reported in the present communication. The conjunctivitis in this case was of the usual muco-purulent form and affected both eyes. With the



onset of the eye disease the urethral discharge, which had been present for three months, ceased. Three days later the patient developed painful swelling of the left great toe joint. Other joints subsequently became involved. The conjunctivitis improved under simple irrigation, and was well on the eighth day. A week later there was a relapse in the right eye, and again in both eyes a month later. A detailed bacteriological examination was made. After searching through eighteen slides three Gram-negative diplococci were found. Colonies of the same diplococcus were obtained on tubes of hæmoglobin-agar, at first mixed with bacillus xerosis, but afterwards pure. It was proved by differential culture to be the gonococcus. The same organism was obtained by blood culture. It could not be found in sections of a snipping from the palpebral conjunctiva. The author concludes, "We believe that the present case makes proof available, that metastatic conjunctivitis is not due to a mixed infection, is not caused alone by the gonotoxin, but that it is a true metastasis of the gonococcus."

A. J. BALLANTYNE.

(4) Under this name **Heerfordt** refers to cases of endogenic gonorrhœal affection of the conjunctiva. In examining 2,310 cases of gonorrhœal affections in the Infirmary of Copenhagen he came across 23 cases of this disease, but he considers that this percentage is too small, as slight cases very likely escaped observation. In none of his cases were gonococci found in either discharge or sections. This seems indeed almost the invariable rule, as the whole literature contains only two cases (Morax and Van Praag) where gonococci could be traced. Heerfordt's description of this disease varies very considerably from Saemisch and Groenouw's in Graefe-Saemisch's text-book. Whereas the latter refer to it as a simple catarrhal inflammation mostly localised in the fornix, Heerfordt finds that the disease always affects the conjunctiva bulbi, or in some cases the deeper layers, subconjunctiva and episclera, primarily, and that if the conjunctiva tarsalis and fornix are affected this is a secondary symptom due to the irritating action of the discharge. There are often typical phlyctenulæ in the conjunctiva bulbi. The process frequently runs a somewhat irregular course, but is mild as a rule, although herpes corneæ and iritis are not unknown. As for treatment, Heerfordt advocates massage with Pagenstecher's ointment.

R. GRUBER.

(5) This paper by **Waldstein**, of Prague, is based on anatomical examination of material got by excision of small particles of conjunctiva in gonorrhœal conjunctivitis and similar forms. His principal results are as follows: (1) The inflammation in gonorrhœal conjunctivitis is, as a rule, confined to the superficial layers. (2) The gonococci (nearly always intracellular) are lying in the upper and middle layers of the epithelium, and penetrate into the basal layer only after the more superficial layers are seriously affected and partly shed. (3) Repair begins from the second half of the first week. We meet then with active proliferation descending into the depth of the necrotic tissue and production of gland-like formations consisting of or containing "cup" cells. (4) The deeper infiltration consists principally of plasma-cells. Mitosis amongst them is quite common. Phagocytes, although increased in number, are by no means as prominent at this stage, but this proportion is reversed at a later period. (5) Eosinophile cells are not of much account. (6) The blood vessels are increased in number and bulk; the emigration of plasma cells and phagocytes can be traced to them. (7) The connective tissue is only slightly affected. (8) Gonorrhœa of the adult is not different in its histological aspect from gonorrhœa neonatorum. (9) Ophthalmia neonatorum of non-bacterial production differs histologically only by the absence of the gonococci. (10) Blennorrhœa, produced by micrococcus catarrhalis,

differs by a comparative immunity of the epithelium even in the first few days. The causal agent seems to penetrate only very superficially, and to be easily eliminated.

R. GRUBER.

## XV.—SARCOMA OF THE CHOROID.

- (1) Purtscher, O.—The diagnosis of sarcoma of the choroid. (Zur Erkennung von Aderhautsarkom.) *Centralb. f. prak. Augenheilk.*, Mai, 1906.
- (2) Schoenberg, M. I., and Camac, C. N. B., (New York City, New York, U.S.A.)—A melanosarcoma of the eye (primary) and of the liver (secondary). *New York Medical Journal*, January 12th, 1907.
- (3) Reis, W.—Intra-ocular hæmorrhage and sarcoma of the choroid. (Intraoculare Blutung und Aderhautsarkom.) *Zeitschrift für Augenheilkunde*, Oktober, 1908.
- (4) Morgano.—Anatomico-pathological observations on two tumours, one a melanotic sarcoma of the limbus, and the other a melanoma of the eye. (Osservazioni anatomico-patologiche sopra un caso di sarcoma melanotico del lembo, e sopra un caso di melanoma dell'occhio.) *La Clinica Oculistica*, December, 1908.
- (5) Lavigerie, Dubois de, and Rochon-Duvigneaud.—Melanotic sarcoma of the choroid. (Sarcome mélanique de la choroïde.) *Bull. et Mém. de la Société Française d'Ophthalmologie*, 1909, p. 504.
- (6) Chevalier.—A case of melanotic sarcoma of the choroid. (Observation de sarcome mélanique de la choroïde.) *Ibidem*, p. 463.

(1) Purtscher reports an interesting case of sarcoma of the choroid in which the tumour was situated in the region of the posterior pole, but in which large quantities of pigmented cells were present in the anterior chamber and iris, which, with a tension of +2, caused the case to resemble hæmorrhagic glaucoma very closely. The diagnosis was cleared up by puncturing the anterior chamber with a small Graefe knife, when the dark brown matter was seen not to be blood. The eye was thereupon enucleated and the above condition found.

A. LEVY.

(2) The striking features of Schoenberg and Camac's case are: "1. Failing vision two years before hepatic involvement. 2. Ocular pain and progressively failing vision one and three-quarters years before hepatic involvement. 3. Clinical diagnosis, glaucoma; pathological diagnosis, melanosarcoma. 4. Abdominal pain and mass in a patient with extirpated eye: no eye symptoms at this time. 5. No jaundice. 6. No ascites. 7. No hæmatemesis or melæna. 8. No varicosity of the veins of the abdomen or extremities. 9. No abdominal pains except at very early stage, and though these were severe they resembled an attack of indigestion. 10. The sudden appearance of the tumour, the rapid development up to a certain size, beyond which it did not go throughout the subsequent course of the disease. 11. Urine turning black and yielding melanin reaction."

C. A. OLIVER.

(3) Reis (Bonn) insists upon the difficulties and the importance of the diagnosis of intraocular tumours. He mentions punctate deposits of pigment

on the iris and Descemet's membrane, and detachment of the retina as suspicious symptoms. Hæmorrhagic glaucoma can easily be confused with tumour, but transillumination can in certain cases help towards making a correct diagnosis. The history and pathology of two cases of sarcoma of the choroid are minutely related and explained by microphotographs, one of which shows the tumour and the whole eye under a low magnification. The contribution contains nothing new, but is valuable as a histological record. It might with advantage have been much condensed.

T. HARRISON BUTLER.

(4) The first case was a tumour which developed from a pigmented mole, in a woman aged 46. The new growth had extended until it covered the outer third of the cornea. Excision of the eye was necessary. In the examination, special attention was paid to the nature of the pigment; it was examined by ferrocyanide of potassium and sulphate of ammonium but there was no evidence of the presence of iron. The microscopical appearances were those of a melanotic sarcoma. **Morgano**, quoting **Perls**, thinks that the absence of iron-holding pigment allows us to conclude that the origin of the pigment in the neoplasm was not the blood but the pigment which exists physiologically in the region of the limbus. In the second case, the new growth had two parts, that inside the eye was deeply pigmented and made up of polymorphous sarcomatous elements, the part outside the sclerotic, on the other hand, was almost pigment-free and was an ordinary spindle-celled sarcoma. In this tumour also, the pigment was iron free. There seems no doubt, however, that the mere presence or absence of iron is not enough to determine the question whether the pigment be derived from the blood or not.

HAROLD GRIMSDALE.

(5) In a case of melanotic sarcoma of the choroid, **Dubois de Lavignerie** and **Rochon-Duvigneaud**, of Paris, found that the sub-retinal exudation was extremely rich in albumin. Under the influence of the formol employed as a fixing agent it became coagulated into a compact mass, of the consistence of a compact ball of caoutchouc. The authors enquire whether an analysis of liquid removed by puncture might not be useful in the diagnosis of detached retina of doubtful origin.

SYDNEY STEPHENSON.

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## XVI.—TRACHOMA.

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- (1) **Sergent, Edmond**—A note upon the history for one year of trachoma in an Algerian colony. (Note sur l'histoire, pendant un an, du trachome dans une agglomération algérienne.) *Annales de L'Institut Pasteur*, 25 mars, 1909.
- (2) **Verhoeff, F. H.**—A rapid method of staining the trachoma bodies of Halberstaedter and Prowazek. *Ophthalmic Record*, October, 1909.
- (3) **Werner, E.**—A contribution to the question of the cause of trachoma. (Beiträge zur Frage des Trachomaerregers.) *Zeitschrift für Augenheilkunde*, Oktober, 1909.
- (4) **Benson, Arthur H.**—Concerning trachoma. *Medical Press and Circular*, December 22nd, 1909.

(1) **Sergent's** observations upon trachoma were made in a colony in Algeria, the inhabitants of which were almost exclusively of the working

agricultural class. Almost all were of Spanish and few of French blood. In general, the conditions of life were miserable. Promiscuity in living appeared to be almost the rule, and to the majority of the inhabitants even the most elementary cleanliness was unknown. Mosquitoes were plentiful, and flies abounded. On one occasion Sergent counted no fewer than sixty flies in the discharges that ran down the face of a sleeping trachomatous infant of ten months.

Between June 3rd, 1907, and June 3rd, 1908, the eyes of the inhabitants were examined by Sergent on four separate occasions. Trachoma was present in 66·1 per cent. of the 236 inhabitants (males 60 per cent., females 68 per cent.) Of the children 64 per cent. were infected as compared with 71 per cent. of the adults. The contamination occurred during infancy, several of the children becoming granulous from the age of three months. Among 20 infections witnessed by the author, 8 occurred during the first year of life, 3 during the second, 3 during the third, 1 during the fourth, 2 during the fifth, 1 during the seventh, 1 during the tenth, and, lastly, 1 only in a grown-up patient. While one of a married couple may remain free for years from disease, although the other suffers from trachoma, that is not the case when dealing with children. In every family where the children were trachomatous, it was the rule to find one of the parents or adults also affected. Families that remained free from disease, although they belonged to the same race and led the same kind of life as the others, usually came from a rather better social level, which entailed as its consequence more comfort and cleanliness. As regards infectivity, no difference could be made out between the Spanish and the French families. Families refractory to the disease were found in both cases.

Sergent, in several instances of new (untreated) infection, succeeded in finding in scrapings of the conjunctival epithelium Prowazek trachoma bodies. All the cases of fresh contamination showed before the appearance of typical granulations, an acute phase, not associated with any microbe.

Sergent reaches the following conclusions:—in the region studied by him trachoma manifested itself as a familial disease, usually contracted in the first few months of life. The neighbourhood of infected families and the attending of school did not appear to exercise any noteworthy influence upon the contamination of those free from the disease. In this particular locality, we must put on one side the idea of frequent infection at a distance (even a short one) or at school or at play. Infection occurs, above all, in the bosom of the family, in those miserable places where the use of bed and washing materials is common to all the members. SYDNEY STEPHENSON.

(2) **Verhoeff**, of Boston, describes a method of staining trachoma bodies, whereby the diagnosis can be made while the patient waits. He employs Wright's well-known modification of Leishman's stain. Specimens, obtained by scraping the cocainized conjunctiva with one edge of a cover glass, are diluted with tears, spread upon the surface of other cover glasses, and allowed to dry in the air. The preparations are now flooded with the staining fluid, which is allowed to act for one minute. Distilled water is then added until a slight scum is formed upon the surface of the liquid, which is allowed to remain for three or four minutes. The preparations are then differentiated by washing away the staining mixture with distilled water and by allowing the water to act for about one minute. Lastly, the preparation is dried with filter paper, and mounted in balsam. SYDNEY STEPHENSON.

(3) **Werner** (Marburg) passes in short review the attempts which have been made to determine the exciting causes of trachoma, up to the time that Prowazek and Halberstädter described the cell inclusions which



they call chlamydozoa. He then mentions the various opinions which have been expressed by many who have repeated these researches, and those of Greeff. The vast majority hold that these cell inclusions are found in all cases of fresh trachoma and in no other disease.

Werner has carefully examined a large number of preparations, which he made both from fresh trachoma cases and other varieties of conjunctivitis, staining his specimens by a modification of the Giemsa stain recommended by Greeff. In all examples of early trachoma he found the cell inclusions, and in many individuals whose trachoma was no longer fresh and had been treated he also detected them in smaller numbers. They were absent from cicatricial trachoma and from all other varieties of conjunctivitis. A very well-drawn coloured plate makes the appearance of these inclusions perfectly clear. The paper carefully explains all the details of the appearances seen, and is worthy of careful study.

T. HARRISON BUTLER.

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## XVII.—DIABETES AND OPERATIONS UPON THE EYE.

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**Bull, Charles Stedman.**—The adverse influence of diabetes in certain operations on the eye. *Trans. American Ophthalmological Society*, Vol. XII, Part I, 1909, p. 62.

**Bull**, of New York, has a communication, based upon 115 cases, dealing with the adverse influence exerted by diabetes in certain operations upon the eye. He has endeavoured to determine, if possible, what class of diabetic patients, if any, are not fit subjects for surgical interference. Although he has not succeeded in this object, yet he has produced a communication which abounds in practical suggestions.

In general surgery it is recognised that some types of diabetic subject bear operation badly. It is known to all ophthalmic surgeons that a similar rule holds good in eye work. It has been proved that diabetes interferes with the success of surgical operations because the hygroscopic sugar circulating in the blood draws water from the tissues of the body, renders them dry, and thereby arrests or retards the processes of repair. The explanation of this process is closely connected with a limitation of the capacity of the leucocytes to furnish alexins to meet the toxins in the blood and prevents the proper development of new repair cells. That diabetes, arterio-sclerosis, and tuberculosis have more than a merely coincidental relationship is considered by Bull as certain.

It is generally advised that operation on a diabetic patient should be postponed until such time as sugar has disappeared from the urine or has been considerably diminished in amount. The amount of sugar, however, is of far less consequence than the quantity of acetone, diacetic acid, and *beta*-oxybutyric acid. Bull does not consider it advisable to adopt a rigid anti-diabetic regimen in a patient immediately prior to operation, particularly if the patient has not been accustomed to the deprivation. Neither, in his opinion, should such a regimen, to which a patient has become accustomed, be interrupted at the time of operation. In other words, it is not wise to make a change in either sense immediately before operation.

The complications liable to be met with in diabetic subjects after operations upon the eye are : 1. Iritis, 2. Hæmorrhage into the anterior chamber, and 3. Infection of the wound, as manifested by slow healing.

Bull draws his experience and conclusions from the study of 115 operations performed upon the eyes of diabetic subjects. This number included 62 cataract extractions, 40 preliminary iridectomies, 9 optical iridectomies, and 4 iridectomies for chronic glaucoma.

As regards the sixty-two cataract extractions, in forty of the cases, where senile cataract occurred in diabetic patients, there were no serious complications, although the wound healed slowly in eleven instances. The remaining twenty-two cases were examples of pure diabetic cataract in patients whose ages ranged from 36 to 40 years. In six of the cases there was profuse, recurrent bleeding into the anterior chamber. In two cases there were retinal hæmorrhages. In six cases operation was followed by obstinate iritis, eventually necessitating discission in two cases.

Results in the two classes, therefore, were very different, since in the first there were practically no complications, while in the second such complications occurred in no fewer than 64 per cent. of the cases.

Bull's forty cases of preliminary iridectomy in cataract patients included twenty-two cases of senile cataract occurring in diabetic patients, whose ages varied between 60 and 68 years, and eighteen true diabetic cataracts, in patients under 40 years of age. In the first-named, there was no instance of iritis after the iridectomy, but in three cases there was hæmorrhage into the anterior chamber, and the external wound healed very slowly. It is to be noted that in these three cases general arterio-sclerosis was present. In the eighteen cases of true diabetic cataract, iritis occurred in four instances, and two of the victims of this complication were found to be suffering from pulmonary tuberculosis, but without evidences of arterial degeneration.

With respect to the nine optical iridectomies, all, with a single exception, did well. The exception occurred in a lady, aged 22 years, in whom the operation was followed by severe iritis, with abundant exudation.

As to the four iridectomies for chronic glaucoma, all did badly, and one nearly died. Profuse bleeding into the anterior chamber occurred in all four cases, and was repeated on several occasions. In the case of a lady, aged 59 years, operation was followed by copious bleeding into the anterior chamber, and at the end of the third day, the patient complained of great pain and in a few hours became delirious. A distinct odour of acetone was noted in her breath. Despite these ominous symptoms, the patient recovered, but only to die eight months later from diabetic coma.

Bull's conclusions are as follows :—

1. We must carefully differentiate those diseases which are directly due to diabetes as a cause from those which may occur independently of the disease.
2. The abnormal products of metabolism—acetone, diacetic acid, and oxybutyric acid—seriously complicate the prognosis, and must, as far as possible, be eliminated before any operation is undertaken.
3. Arterio-sclerosis plays an important rôle in the ætiology of the disease and its complications.
4. The prognosis does not depend on the percentage of glucose in the urine, but on the degree of acid intoxication.
5. The possible connection between diabetes and tuberculosis needs more searching investigation before any positive opinion can be formulated.

*Discussion.*—An interesting discussion followed the reading of Bull's communication. Most of the speakers insisted upon the advisability of reducing the amount of sugar in the urine before operating for cataract. **S. Lewis Ziegler**, of Philadelphia, praised very highly the internal administration in diabetes of "Clemens' solution of the arsenite of bromin," in doses of from three to five drops in water after each meal. The same

speaker had lost a patient from diabetic coma after the eyeball had been removed under ether anæsthesia, and he advised that ether should never be administered to confirmed diabetics. **P. A. Callan**, of New York, recommended the administration of suprarenal capsule in cases of hæmorrhage into the anterior chamber. **C. J. Kipp**, of New York, made a large incision in operating for cataract in diabetic patients, and was careful to use very little pressure in expelling the lens. **Robert L. Randolph**, of Baltimore, regarded cataract in rather young diabetics as an indication that the disease would terminate fatally within a few months. **W. H. Carmalt**, of New Haven, had witnessed a curious occurrence during the removal of a diabetic cataract. As soon as the anterior chamber was opened, aqueous, almost as black as ink, escaped from the eye, in consequence of evacuation of iris pigment. The eyeball collapsed, the cornea began to slough, and the patient (a woman about sixty years of age) died within the week. In his reply, **Bull** mentioned a couple of cases of cataract in diabetic patients, both of whom succumbed to diabetic coma within a few days after operation.

SYDNEY STEPHENSON.

### XVIII.—EXOPHTHALMOS.

- (1) **Demicheri**.—Pulsating exophthalmos caused by an intra-cranial hydatid. (*Exophtalmie pulsatile par kyste hydatique intracrânien.*) *Ann. d'Oculistique*, T. CXL. p. 102, août, 1908.
- (2) **Bettremieux**.—Traumatic exophthalmos with a souffle disappearing on compression of the angular vein (*Exophtalmie traumatique avec souffle qui disparaît par compression de la veine angulaire.*) *Ann. d'Oculistique*, T. CXXI., p. 28, janvier, 1909.
- (3) **Hird, Beatson and Haslam, William F.**—A case of spontaneous pulsating exophthalmos. *Lancet*, Feb. 13th, 1909.
- (4) **Junius**.—A case of unilateral exophthalmos cured by the extraction of a 6 c.m. long knife-blade from the orbit (*Ein Fall von Exophthalmos-geheilt durch Entfernung einer 6 c.m. langen Messerklinge aus der Augenhöhle.*) *Zeitschrift für Augenheilkunde*, Februar, 1909.
- (5) **Saint-Martin de**.—A case of intermittent exophthalmos (varicocele of the orbit). [*Un cas d'exophtalmie intermittente (Varicocèle de l'orbite).*] *Ann. d'Oculistique*, T. CXXI., p. 353, mai, 1909.

(1) **Demicheri** records the case of a male patient who, when five years old, developed pulsating exophthalmos of the left eye. No special treatment was adopted, and when 14 years old, he returned with the eye displaced downwards and forwards but partially reducible, and a depression in the middle of the superior orbital wall from which a sort of soft and depressible cyst could be felt to protrude when the patient made an effort. The motions of the eyeball were good. Treatment by electrolysis was tried without definite benefit. Three years later the patient returned with the condition of his eye unaltered, except that the upper lid was distended by a cyst the size of a nut which seemed to start from the back of the orbit. An attempt to remove the cyst

was made by Dr. Quintela, who had to open its wall, when it was found to extend into the cranial cavity and to contain over 100 hydatid cysts. When these had all been removed, the cavity was found to extend 7 c.m. directly backwards and 10 c.m. backwards and outwards from the orbital margin, reaching the region of the cavernous sinus, and to be big enough to hold 250 grammes of physiological serum. Healing, which was slow but normal, was complete in three months, the pulsations having completely disappeared and the displacement of the eyeball having become much less marked. A year later the patient returned for examination, when a slight cystic prominence was found behind the orbital margin. This was opened and found to contain a quantity of clear fluid.

The author considers that the question of whether pulsating exophthalmos which developed when the patient was 5 years old was caused by compression of the cavernous sinus by the intra-cranial cyst, or whether there was already an extension of the tumour to the orbit, cannot be decided. He quotes six cases from literature of pulsating exophthalmos due to tumours, in all of which the growth had extended to the orbit, but has not been able to find any case recorded previous to his own in which the condition was caused by an intra-cranial hydatid.

R. J. COULTER.

(2) **Betremieux** records a case of traumatic exophthalmos, accompanied by an intermittent *bruit*, heard both subjectively and objectively, which ceased on compression of the angular vein. He has found two other recorded cases in which *bruits* ceased on compression of the angular vein, and suggests that if search were made for this symptom it might be found more frequently. He considers that in his case the symptoms were caused by arterial compression at the apex of the orbit, or by a small arterial aneurysm, and that the explanation of the cessation of the *bruit* on pressure over the upper and inner angle of the orbit was that return of blood through the ophthalmic veins being almost impossible owing to pressure, the orbital circulation was practically stopped by compression of the angular vein.

R. J. COULTER.

(3) **Hird** and **Haslam** report at length a case of right-sided pulsating exophthalmos, which came on suddenly in a woman of 24 years when at work. After treatment by rest in bed and iodide of potassium, the right common carotid artery was ligatured. At the operation the thyroid was found enlarged. The improvement was only temporary, and a month later the right internal angular vein was tried. The operation was not followed by thrombosis of the cavernous sinus, as in the case of Pritchard and Burghard, but it was unsuccessful in curing the condition. The patient is being kept under observation. The exact diagnosis, uncertain at first, eventually seemed to be that communication existed between the internal carotid and the cavernous sinus. The reviewer has purposely refrained from giving an account of the numerous signs and symptoms and of their variations, which should be sought in the original.

ERNEST THOMSON.

(4) **Junius** (Cologne).—Six years ago the patient had a fight with a comrade who stabbed him in the eye. The wound left a fistula which discharged pus. Junius with the greatest difficulty removed a broken pocket-knife blade from the orbit. The point was probably in the cranial cavity. No essential damage had resulted, and the patient retained an absolutely normal eye.

T. HARRISON BUTLER.

(5) **Saint-Martin** gives a detailed description of a case of intermittent exophthalmos evidently caused by distension of the orbital veins (varicocele of the orbit). The protrusion of the eyeball occurred whenever venous congestion was produced by stooping, by compressing the jugular vein, or by any other means, and when at its maximum, was accompanied by a non-pulsatile



tumour, the size of a cherry, in the lower-inner angle of the orbit. There was no thrill or *bruit* over this tumour, but pressure on it caused counter-pressure distinctly felt by the hand compressing the vessels of the neck.

R. J. COULTER.

## XIX.—MIKULICZ'S DISEASE.

- (1) **Randolph, Robert L.**—A case of Mikulicz's disease. *Ophthalmic Record*, January, 1909.
- (2) **Ziegler, S. Lewis.**—Symmetrical lymphomata of the lacrimal and salivary glands. *Trans. American Ophthalmological Society*, Vol. XII, part I, 1909, p. 222.

(1) **Randolph**, of Baltimore, reports a somewhat unusual case of Mikulicz's disease in a negress, 30 years of age, who presented "enormous symmetrical enlargement of the lacrymal glands," which subsided after the administration of potassium iodide for about three months. The parotid glands, however, then began to swell. When the patient was exhibited some three months later at the Johns Hopkins Hospital Medical Society, the right parotid was nearly as big as a hen's egg and the other gland was about half that size.

SYDNEY STEPHENSON.

(2) **Ziegler**, of Philadelphia, describes a couple of cases of the rare affection which bears the eponymic title of "Mikulicz's Disease." This condition, as everybody knows, is characterised by chronic, symmetrical, non-inflammatory enlargement of the lacrymal and salivary glands. The glandular swellings, which are painless, are not associated with any demonstrable systemic disease.

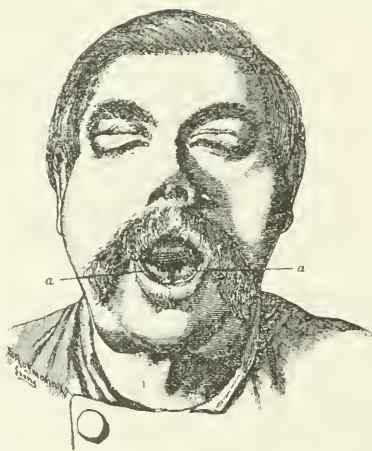


Fig. 1.—Symmetrical enlargement of the lacrimal, parotid, and submaxillary glands. (Original case of Mikulicz.)

**Symptomatology.**—Mikulicz's original patient is shown in the accompanying illustration (see fig. 1). In that case the lacrimal, parotid, and submaxillary glands were symmetrically and simultaneously enlarged. Atypical and non-symmetrical cases occur, and Ziegler thinks that had such cases been kept under observation long enough, they might have eventually

developed lymphomata of the unaffected glands. The disease usually begins in the lacrimal gland, and afterwards involves the parotid and submaxillary glands. This sequence, however, may be reversed. Other glands about the face and the mouth, such as the accessory lacrimal or parotids, the preauricular, the sublingual, the glands of the palate, or the Blandin-Nuhn glands at the end of the tongue, may be affected. Other associated conditions may be enlargement of the spleen, of the cervical glands, of the tonsils, and of the adenoid tissue of the pharynx. Apart from these occasional accompaniments, no evidence of a general lymphatic disturbance has been found in Mikulicz's disease.

The facial appearance is characteristic. "There is a marked broadening of the cheeks as in mumps, and partial ptosis on the temporal side, the drooping eye-lids resembling those of a bloodhound." Elevation of the lid at the outer canthus often shows that the retro-tarsal fold is displaced downwards by the swollen and pendulous lacrimal gland (see Fig. 2).

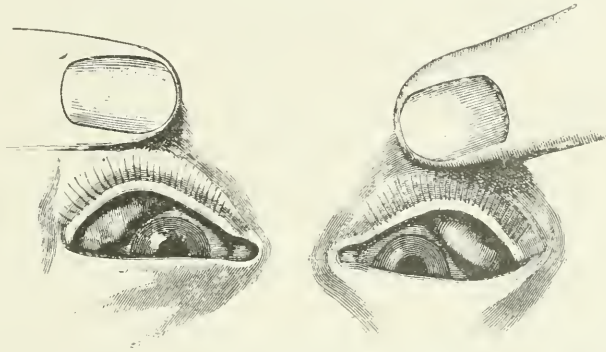


Fig. 2.—Downward displacement of pendulous lacrimal glands. (Mikulicz.)

Males and females are affected in about equal proportions. The first symptoms have been seen equally in children and in old age. The duration of the attack has varied from two months to upwards of ten years.

**Ætiology.**—The ætiological factors suggested have been :—1. Infection from buccal or conjunctival bacteria ; 2. glandular irritation from some toxic agent in the blood-or lymph-stream, causing lymphatic hyperplasia ; and 3, an idiopathic origin. Mikulicz and Kummel advocate the theory of "an infectious or parasitical process in the widest sense of the word." Ziegler believes that granting the possibility of infection, the source of infection is likely to be nasal, and the means of transmission through the lymphatic capillaries. "It certainly seems possible," he remarks, "that a steady stream of toxic, bacteria-laden secretions could be absorbed from the accessory sinuses (chiefly antrum), and carried directly to these contiguous glands." Mikulicz suggests that the lacrimal gland is usually the first to be attacked, because the "disease exciter" enters through the conjunctiva, whence it spreads by the lacrimal canal to the nose, naso-pharynx, and mouth. The specific agent (assuming such to exist) is carried by the mucous membrane to the other glands. A racial predisposition to lymphatic dyscrasie appears to be shown by the fact that all the cases of Mikulicz's disease so far reported in America have been in members of the negro race.

**Pathology.**—The pathology is as obscure as many other points about this curious disease. Mikulicz's examination of an extirpated gland showed that the parenchyma proper played a completely passive part. The swelling of

the gland was produced solely by an enormous infiltration of the interstitial connective tissue with small cells. No micro-organisms have been found in any of the reported cases.

**Diagnosis.**—The disease must be differentiated from the glandular swellings of leukæmia and pseudo-leukæmia, lympho-sarcoma, carcinoma, and tuberculous and syphilitic adenitis. The symmetrical character of the affected glands is an important diagnostic feature of Mikulicz's disease.

**Prognosis.**—Prognosis is favourable, although the disease runs a very chronic course and is liable to relapses. No fatal case has so far been reported.

**Treatment.**—The favourite remedies are arsenic, iodides, and pilocarpine. The majority of cases yield promptly to the internal administration of Fowler's solution. Success has followed the use of potassium iodide and the syrup of the iodide of iron. The author suggests that Lugol's solution may be useful. Thyroid gland, again, is a remedy that merits trial. X-rays are of service in some cases. Extirpation of the enlarged glands has not been followed by any degree of success. By Ziegler, great stress is laid upon the necessity of restoring free nasal breathing by the removal of enlarged tonsils and adenoids, the cauterisation of swollen inferior turbinates, and the removal of flabby or enlarged middle turbinates.

### Summary.

1. Careful differentiation of the symptom-complex described by Mikulicz demonstrates that this disease is a pathological entity, *sui generis*, and not associated with any systemic disease.

2. The syndrome of symmetrical enlargement of the lacrymal and salivary glands is sufficiently characteristic to be accepted as pathognomonic of Mikulicz's disease.

3. The enormous lymph-cell infiltration into the interstitial tissue, and the relative passivity of the gland structure, demand that this tumefaction shall be classed as true lymphoma or lymph tumor, as distinguished from adenoma or tumor of the glandular substance.

4. As no specific bacteria have been discovered, either in the glands or in the blood, the pathogenesis is probably chemotactic, thus causing a localised toxic hyperleucocytosis in the affected glands.

5. Toxic fluids that are chemically irritating are probably absorbed from the accessory sinuses (chiefly antrum) and transmitted through the lymphatic capillaries to these contiguous glands.

6. Respiratory obstruction not only hinders the evaporation and drainage of these sinus secretions, but also causes suboxidation and other disturbances of metabolism. It should, therefore, be considered a true ætiologic factor.

7. The diagnosis of tuberculous adenitis and of lympho-sarcoma has been repeatedly proven wrong by the spontaneous involution of the lymphomatous glands.

8. The glandular enlargements of leucemia, pseudo-leucemia, syphilis, lipoma, and carcinoma are so characteristic that they should easily be differentiated.

9. The course of Mikulicz's disease is chronic, but the prognosis is favourable, with a tendency to relapse.

10. The treatment aims to improve lymphatic action and systemic oxidation. Arsenic, the iodids, pilocarpin, thyroid extract, and the X-rays have each shown some field of usefulness. All respiratory obstructions must be promptly and thoroughly removed. Extirpation is rarely indicated.

SYDNEY STEPHENSON.

## XX.—DISEASES OF THE CORNEA.

- (1) Paltracca, E.—Contribution to the study of the disciform keratitis of Fuchs. *Annali di Ottalmologia*, Vol. XXXVI, fasc. 6 to 8, p. 603-13.
- (2) Herbert, H.—Lower corneal plaques. *Transactions Ophthalmological Society U.K.*, Vol. XXVIII, 1907-8.
- (3) Marfan and Weill-Hallé. — Heredo-syphilitic sarcocele with parenchymatous keratitis in a child of twelve and a half years. *Annales de Médecine et Chirurgie Infantiles*, 1 septembre, 1907.
- (4) Pusey, Brown.—Involvement of the cornea and bulbar conjunctiva in the secondary stage of syphilis. *Journal American Medical Association*, 7th September, 1907.
- (5) Demaria.—The syphilitic affections of the cornea. Deep nodular keratitis. (Contribucion al estudio de la afecciones sifilíticas de la cornea — Queratitis nodular profunda sifilitica.) *Archivos de Oftalmologia Hispano-Americanos*, Enero, 1908.
- (6) Jacqueau.—Parenchymatous keratitis with concomitent arthritis. (Kératites parenchymateuses et arthrites concomitantes.) *L'Ophthalmologie Provinciale*, T. V, juin, 1908.
- (7) Mooney, Herbert, C.—On some corneal ulcers. *Medical Press and Circular*, December 23, 1908.
- (8) MacWhinnie A. M.—Atypical filamentary keratitis. *Ophthalmology*, January, 1909.
- (9) Wanamaker, A. T.—Two cases of serpiginous ulcer following removal of foreign body from the cornea by factory foremen. *Journal of Ophthalmology and Oto-Laryngology*, 1909, Vol. III, p. 51.
- (10) Jocsq, R.—Neuro-trophic keratitis: a case of severe keratitis of dental origin. (De la kératite neurotrophique, un cas de kératite grave d'origine dentaire.) *La Clinique Ophthalmologique*, 10 janvier, 1909.
- (11) Trantas.—Superficial keratitis due to ammonia vapour. (Kératite superficielle due aux vapeurs ammoniacales.) *Recueil d'Ophthalmologie*, janvier, 1909.
- (12) Wiener, M.—Keratitis punctata superficialis, with report of a case. *Archives of Ophthalmology*, March, 1909.
- (12A) Zentmayer, W.—Nodular opacities of the cornea: report of a case. *Ophthalmology*, Vol. V, July, 1909.
- (13) Williams, Hugh Blake.—A case of interstitial keratitis probably due to auto-intoxication. *Journal of Ophthalmology and Oto-Laryngology*, August, 1909.
- (14) Gilbert, W.—On leucoma and ribbon-shaped corneal opacity. (Leukome und Bandformige Hornhauttrübung.) von Graefe's *Archiv für Ophthalmologie*, Bd LXXII, Heft 2, September 26th, 1909.
- (15) Jacqueau.—A form of hereditary family keratitis. (Une forme de kératite héréditaire et familiale.) *La Clinique Ophthalmologique*, 10 septembre, 1909.



- (16) Collins, E. Treacher.—Symmetrical circumferential encroachment on the cornea by the limbus of the conjunctiva in the two eyes, with an arcus senilis inside the limbus, the patient being also the subject of progressive ptosis. *Transactions Ophthalmological Society U. K.*, fasc 3, 1909.
- (17) Komota, J.—On congenital hereditary opacity of the cornea. (Ueber angeborene erbliche Hornhauttrübung.) *Klin. Monatsbl. f. Augenheilkunde*, Oktober, 1909.
- (18) Asmus.—Bilateral parenchymatous keratitis of syphilitic nature following a unilateral injury. (Doppelseitige Keratitis parenchymatosa auf luetische Basis nach einseitigem Trauma.) *Zeitschrift für Augenheilkunde*, Oktober, 1909.

(1) This case, unique but absolutely typical and well studied by **Paltracca**, of Siena, would prove the endogenous origin of the form of keratitis designated by Fuchs "disciform," since the affection can commence in an irido-cyclitis. (We think there should be a good deal of reserve in interpreting these clinical facts.) Treatment by intra-muscular injections of sublimate, in spite of the absence of any suggestion of syphilis, seemed greatly to shorten the disease, which, as one knows, is chronic or has a very slow course.

A. ANTONELLI.

(2) **Herbert**, of Nottingham, describes a corneal affection found in India sufficiently often for it to be recognised as a distinct clinical entity. There are one or more slightly raised greyish patches with rough surfaces, close to the lower corneal margin and generally extending quite to the margin. The patches are feebly vascular. General pannus is only occasionally found associated. In nearly all cases the palpebral conjunctiva is roughened or scarred, and there seems to be a definite connection between the conjunctivitis and the corneal changes. A diagram shows the shape and position of some of these patches.

ERNEST THOMSON.

(3) **Marfan** and **Weill-Halle** relate the case of a child who, with distinct family history of syphilis, presented a large firm swelling of one testicle, which did not seem to be a hydrocele, while suffering at the same time from interstitial keratitis. The authors consider the case worth reporting because orchitis in late heredo-syphilis is uncommon. In this case the diagnosis was assisted by the presence of keratitis.

ERNEST THOMSON.

(5) **Demaria** draws attention to a condition of the cornea, which is not always recognised, though it has been described by various authors. It is one of the manifestations of syphilis. In the case which forms the text of his paper, it had been regarded as interstitial keratitis. The eyes were inflamed for some months; and showed slight ciliary injection. In the parenchyma of the cornea were a number of scattered opacities, in colour greyish, well limited nodules, so deep that they did not raise the surface of the epithelium over them. The rest of the cornea remained transparent.

A short bibliography concludes the article.

HAROLD GRIMSDALE.

(6) **Jacqueau** (of Lyons) considers that about half of the cases of interstitial keratitis are complicated by arthritis with effusion, which is overlooked, because, as a rule, the patients do not complain of pain in the joints, which are not usually systematically examined. He gives notes of five cases in which he has observed the complication, including two in which a recurrence of the arthritis occurred simultaneously with a fresh attack of keratitis.

R. J. COULTER.

(7) This article by **Mooney**, of Dublin, is the substance of a clinical lecture

which calls for no very special comment. We agree with the writer that after removing an iron foreign body from the cornea, it is sometimes better to leave the rusty staining alone than to risk injuring the cornea too much by our efforts at removal.

ERNEST THOMSON.

(9) In the course of one month both these cases came under observation; both were pneumococcal infections. The usual treatment was adopted, with the usual unsatisfactory result—deterioration of vision, on account of the corneal scar. Neither serum nor vaccine was used. **Wanamaker**, of Chicago, urges that such cases are not uncommon, and that prevention is better than cure.

HENRY L. G. LEASK.

(10) After some rather discursive remarks upon the subject of "neurotrophic keratitis," **Jocqs**, of Paris, relates the case of a librarian, aged 58, whom he treated quite unsuccessfully for irregular exfoliation of corneal epithelium, intense photophobia, and strong myosis, until he discovered some decayed teeth on the affected side. These had given no pain, but on their removal, the symptoms disappeared immediately.

ERNEST THOMSON.

(11) **Trantas's** patient, a man aged 30 years, had suffered from catarrhal conjunctivitis some months before he came up for treatment. This trouble, however, was cured spontaneously in a few days. Ten days before admission there was a recurrence of the conjunctivitis in the right eye and the sight in this eye became dim. On examination of the eyes, **Trantas** found hyperæmia of the palpebral conjunctiva on both sides, but it was more marked on the right and the *cul-de-sac* was whitish, with roundish purple disseminated spots 2 to 3 mm. in diameter and having the appearance of spots of ecchymosis. The right cornea was apparently normal, but with oblique light and a strong lens, a greyish band, about 3 mm. in extent, could be seen extending horizontally across the cornea exposed in the palpebral aperture. This band was seen to be made up of very fine opaque grey and white spots. A few of these small spots were spread over the rest of the cornea. At the lower part of the cornea near the limbus were two round greyish superficial patches 1 and 2 mm. in diameter. The limbus was also more opaque than usual, so that the corneal circumference appeared irregular. The cornea was otherwise normal. There were a few similar disseminated spots on the left cornea. Fundi and fields normal. R.V. =  $\frac{1}{2}$ , L.V. = 1. The patient's family and personal histories were good. **Trantas** attributes the condition to the constant irritation of ammonia gas which the patient had been engaged in making at the gasworks for a year and a half. He assumes that in this work the right eye is more exposed to the vapour than the left. The trouble could probably be prevented by better ventilation of the factory and wearing of protective glasses by the workers. The condition was cured by removal of the patient from the vapour.

J. JAMESON EVANS.

(12) **Wiener** reports a case of keratitis punctata superficialis, similar to those described in 1901 by Major H. Herbert. It was unilateral, in a young girl, and was accompanied by slight conjunctival injection and a little roughness of the palpebral conjunctiva of the upper lid. The cornea was studded with numerous small round greyish dots, about 30 in number, raised above the surface, mostly occupying the centre of the cornea, and involving only the epithelium or the epithelium and the most superficial part of Bowman's membrane. Scrapings from a couple of elevations were taken and tubes of gelatine and agar inoculated. They remained sterile. The inflammation resolved rapidly, but grayish dots were left which yielded more slowly in a little over two months. The author had seen no previous case in St. Louis.

ROSA FORD.

(12A) After a brief survey of the literature of nodular opacities and a classification of the recognised forms, **Zentmayer** describes a case which came under his own observation. One of the nodules, excised and pathologically examined by Goldberg, showed changes which seemed to be moving in the direction of hyaline degeneration. A. J. BALLANTYNE.

(13) **Williams**, of Chicago, reports the case of a lady, aged 23 years. There was a tuberculous family history, and the patient had had an operation for the removal of the post-cervical glands of the left side seven years ago. Inoculation with tuberculin gave negative results. Certain gastric and intestinal symptoms were complained of. Menstruation was normal; urine contained neither sugar, albumin, nor casts. Right eye normal; the left eye showed an interstitial keratitis, which had begun in the superior nasal quadrant and was advancing. An iritis of moderate intensity was present, and was accompanied by an unusual degree of cyclitis. Atropin and dionin locally; calomel purge and syrup of the iodide of iron and hypophosphites as general treatment. The disease ran rather a sluggish course, and involved eventually two-thirds of the whole cornea. Improvement was slow, then the condition began to hang fire—no pain, no discomfort, but no improvement. The general physician, after an examination of the blood, urine, and fæces at this stage, arrived at a diagnosis of auto-infection. A green vegetable diet, with tonics and intestinal antiseptics, completed the cure, so that now, with the proper correction, V.A.L.  $\frac{2}{20}$ , so thoroughly has the corneal opacity cleared up.

HENRY L. G. LEASK.

(14) Histological examination often reveals in leucoma curious spiral fibres which resemble elastic fibres, but differ by their staining peculiarities. **Gilbert** is inclined to consider them as due to hyaline degeneration of a coagulated albuminous exudate. Gradually, they disintegrate and produce small granular or amorphous deposits. Gilbert thinks that the hyaline degeneration always precedes the calcareous, although there is some difference of opinion on this point. It is of practical importance to know that while the ochre-like colour within an affected area often denotes hyaline degeneration, this is by no means an invariable rule. Hyaline concretions may be present without colouring, and, again, the colouring may be due to other causes. It is quite impossible to say whether degenerative changes have taken place in a leucoma or not, and treatment which is directed towards removing any thus assumed concretion lacks scientific foundation. R. GRUBER.

(15) **Jacqueau** (Lyons) gives an account of a family who presented the peculiar form of keratitis which has been described variously as grill-like, lattice-like, or nodular, and as being a family affection. References to the literature are given, and the author states that the recorded cases which come nearest to his own are those of R. W. Doyne and Sydney Stephenson (see *THE OPHTHALMOSCOPE*, May 1st, 1905), with this difference, that his cases were a little older than the five cases reported by Doyne and Stephenson. In two of Jacqueau's cases, iritis occurred concomitantly; this, he says, has not been seen by any of the writers he quotes. He seems to regard this iritis as more or less accidental and not as a usual symptom of this affection, which he regards as dystrophic rather than inflammatory. In discussing the ætiology the author entirely rejects tuberculosis on account of the relatively advanced age of his eight patients (otherwise absolutely free of signs of tubercle) at which the affection of the corneæ commenced. The youngest was 22 years. Syphilis was out of court in this family. Gout is a possible cause. Consanguinity is perhaps a factor. In short, the ætiology is still to seek; the author has aimed merely at showing that these torpid, grill-like forms of keratitis of late and sluggish evolution, so resistant to all



treatment, have not only a family but also a hereditary character. The article forms an interesting addition to the literature of an important subject. There are, however, no illustrations.

ERNEST THOMSON.

(16) The remarkable case reported by **E. Treacher Collins**, of London, concerns a woman of 69 years, who suffered from progressive ptosis, as proved by reference to photographs at different dates, and from a symmetrical circumferential opacity of the cornea, the appearance of which suggested that it was due to the limbus of the conjunctiva having become prolonged over the cornea. An oval central portion only of each cornea, with its long axis horizontal, presented normal transparency. The opaque area was greyish, allowed the normal outline of the cornea to be made out, and was provided with blood vessels continuous with those of the conjunctiva. In the peripheral part of the oval area enclosed by the circumferential opacity, was an opaque ring, similar in appearance to an arcus senilis. It was separated from the circumferential opacity by a semi-opaque zone, in the same way as a normally situated arcus is separated from the limbus. There was no history to account for the condition. Cases of progressive bilateral ptosis had been recorded by Fuchs.

In the discussion, **Holmes Spicer** thought the whole condition might be congenital. The ptosis in this case dated from birth to some extent, and he had seen encroachment of the limbus on the cornea marked in children. He supposed the ptosis in its advancing condition was closely allied to that seen occasionally in cases of myasthenia gavis. **Collins** replied that there were no other evidences of myasthenia in this patient.

ERNEST THOMSON.

(17) **Komoto** observed in a patient, aged 40, a bilateral diffuse grey corneal opacity. V. was reduced to 6/15. The epithelium was quite smooth, and no vessels could be made out in the opacity, which implicated the whole cornea evenly. The eyes were otherwise healthy. The same affection was seen in the patient's four-year-old son and one-year-old daughter; moreover, in a nephew, aged 11 years. The man's two children had, in addition, congenital cataract, of which no further details are given.

C. MARKUS.

(18) **Asmus** (Düsseldorf).—A piece of emery flew into the eye of a young mechanic. A typical keratitis, such as is constantly seen in industrial towns after such injuries, followed. Instead, however, of clearing up, the case developed into an interstitial keratitis, which was soon repeated in the second eye. It was ascertained that a brother had a saddle nose, Hutchinson's teeth, and interstitial keratitis, and the father had suffered from severe syphilis. An attempt to obtain compensation failed. Fortunately, both the corneæ cleared up, leaving good vision. A similar case was reported by Perlias.

T. HARRISON BUTLER.

## XXI.—REMEDIES.

- (1) **Bondi**.—The therapeutic value of sophol. (Der therapeutische Wert des Sophols.) *Zeitschrift für Augenheilkunde*, Juni, 1909.
- (2) **Dolcet**.—The advantages of extirpation of carcinomata of the lids over the treatment by means of radiotherapy. (Ventajas de la extirpacion sobre la radiotherapia en el tratamiento del cancer de la parpados.) *Archivos de Oftal. Hispano-Americanos*, September, 1909.



- (3) Verrey, L.—On paraspecific serotherapy by the mouth: some applications of the method in eye work. (De la sérothérapie paraspécifique par voie buccale: quelques applications de cette méthode en oculistique.) *Rev. Méd. de la Suisse Romande*, 20 septembre, 1909.
- (4) Arens, C.—On the treatment of *ulcus serpens* by pyocyanase. (Ueber die Behandlung des *Ulcus Serpens* mit Pyocyanase.) *Wochenschrift für Therapie und Hygiene des Auges*, Oktober, 1909.
- (5) Wolff-Eisner, A.—On the treatment of hay fever, particularly regarding protective apparatus against pollen. (Ueber Heufieberbehandlung, speziell über Pollenschutzapparate.) *Wochenschrift f. Therapie u. Hygiene des Auges*, Oktober 7 u. 14, 1909.
- (6) Gemmill, Wm.—Rodent ulcer treated by potassium bichromate. *Brit. Med. Journ.*, 23rd October, 1909.
- (7) Marquez.—Therapeutic treatment of silver opacities of the cornea. (Terapeutica de las manchas corneales argenticas). *Arch. de Oft.*, October, 1909.
- (8) Judin, K.—A case of atrophy of the optic nerves resulting from arsacetin treatment. (Ein Fall Atrophie des Sehnerven infolge Arsacetinbehandlung.) *Wochenschrift f. Therapie u. Hygiene des Auges*, 4 November, 1909.
- (9) Marques, Pons Y.—A case of paralysis of the levator palpebræ, following a subconjunctival injection of cyanide of mercury with acoin and cocain. (Un caso de parálisis del elevador del párpado superior consecutivo a una inyección subconjuntival de cianuro de mercurio con acoina y cocaína.) *Arch. de Oftal. Hispano-Americanos*, November, 1909.
- (10) Orloff, C.—Bier's method in the treatment of spring catarrh. *La Clinique Ophthalmologique*, 10 novembre, 1909.
- (11) Stephenson, Sydney.—The constitutional treatment of interstitial keratitis. *Polyclinic*, December, 1909.
- (12) Bonsignorio, Doctoresse.—A substitute for dionine in ophthalmology. *Bull. Gén. de Théraputique*, 15 décembre, 1909.
- (13) Bride, Thomas Milnes.—The value of silver nitrate, protargol, and argyrol in the treatment of catarrhal and muco-purulent conjunctivitis. *Medical Chronicle*, December, 1909.
- (14) Chance, Burton.—On the use of mercury by the ophthalmic surgeon. *Therapeutic Gazette*, December 15th, 1909.
- (15) Davis, A. Edward.—The treatment of the eye when the globe is infected, with the object of preventing panophthalmitis. *Trans. Amer. Ophthal. Society*, Vol. XII, Part I, 1909, p. 103.
- (16) Roure.—A case of glaucoma treated by high frequency currents. *La Clinique Ophthalmologique*, 10 décembre, 1909.

- (17) **Terson, A.**—On the cure of inveterate pannus by jequirity. *La Clinique Ophthalmologique*, 10 décembre, 1909.
- (18) **Weiss, Karl E.**—Eusemin in eye work. (Eusemin in der Augenheilkunde.) *Woch. f. Ther. u. Hygiene des Auges*, Januar 6, 1910.

(1) **Bondi (Iglan).**—Sophol is an albuminate of silver. It is a combination of formaldehyde nuclinic acid with silver, the compound containing 20 per cent of the metal. The silver is present in a masked form; it cannot be detected by the usual reagents (chlorides, etc.) Sophol is a yellowish-brown powder easily soluble in water. The author usually uses a 5 to 10 per cent. solution, but he has painted the lids with the undissolved powder. Bondi finds that sophol is a mild application, causing little or no irritation and no cauterisation. It is useful in those cases where the bacteria have not penetrated deeply into the tissues, but when this has taken place, it cannot replace silver nitrate. Bondi does not say how it compares with protargol—in fact, beyond telling us that it does not irritate, he gives little real information as to its clinical value.

T. HARRISON BUTLER.

(2) Extirpation of these tumours is more simple, more rapid, and less often followed by relapse than is removal by radio-therapy. Exposure to the X-rays is frequently followed by conjunctivitis, often of a troublesome character, and, further, the tissues, after the treatment, are left in a condition in which cicatrisation is imperfect and slow.

HAROLD GRIMSDALE.

(3) **Verrey** reports a series of eye cases, six in number, treated by the administration by the mouth of diluted anti-diphtheritic serum, according to the plan recommended by Darier, of Paris. Of the cases, two were instances of acute iritis, two of iritis and secondary glaucoma, one of post-operative infection, and one of sub-acute neuro-retinitis. Verrey speaks in high terms of the method, and some of his cases certainly justify his doing so.

SYDNEY STEPHENSON.

(4) **Arens**, of Würzburg, has treated all his cases (17 in five months) of *ulcus serpens* with hypopyon by pyocyanase since reading Heilbron's paper (see THE OPHTHALMOSCOPE, Volume VII, p. 599).

It is dropped on to the affected eye half-hourly, except during the night, and a bandage applied to hinder rapid loss. Apart from the pyocyanase, the only other treatment was by atropine and warm applications. The results are claimed to have been excellent. Average residence in hospital was 4-10 days. The resulting leucoma was much less dense than after the thermo-cautery; and the author states that had he not been confident of the result of the treatment, he would have used the cautery on admission in certain of the cases. The only case to go on to panophthalmitis was one in an old woman of 70 years in an eye blind from glaucoma absolutum. In spite of the above treatment, the ulcer invaded the entire cornea and had to be treated by the Saemisch operation. Intraocular hæmorrhage followed, lasting for twenty-four hours, and, ultimately, panophthalmitis supervened. Nothing is said of the bacteriology of the cases, and in the absence of that information, few conclusions can be drawn.

W. B. INGLIS POLLOCK.

(5) **Wolff-Eisner**, of Berlin, from an experience of over 200 cases of hay fever in the last four years, states that they may be divided into three classes slightly, moderately, and extremely sensitive to pollen, and that the majority of the cases seeking medical advice belong to the second division. The antitoxins pollantin and graminol do not succeed in a number of cases. For those who cannot escape to Heligoland, he has devised a small wool-containing apparatus to be placed in each nostril, and a pair of goggles resembling motor

goggles but with the ventilation openings protected by wool filters. In some patients the conjunctiva is more sensitive and in others the nasal mucosa, and thus one or other of the above may only be required. For severe cases he recommends a pollen-free room until the worse stage and any accompanying asthma have subsided. No one should enter without changing the clothes and shoes worn outside. All washed garments to be dried indoors and the ventilators protected by wool. A hope is expressed that an active immunity may yet be reached by serum treatment.

W. B. INGLIS POLLOCK.

(6) **Gemmill**, of Ayr, treated successfully a large rodent ulcer involving the parts over most of the bony skeleton of the nose. Duration, two years. A 10 per cent. aqueous solution of potassium bichromate was painted over the surface of the lesion for a few days until marked inflammatory reaction occurred, and a dressing of boric ointment was then applied. The process was repeated twice. After the completion of the third series of applications of the bichromate, the epithelium spread rapidly over the ulcer, which healed completely, leaving a somewhat irregularly-pitted cicatrix. A period of three months was occupied by the entire process. The patient, a woman, was 82 years of age.

SYDNEY STEPHENSON.

(7) Silver nitrate, when applied in too strong solutions to a mucous membrane, cauterises it energetically and forms a white discoloration of albuminate and chloride of silver. If there be any solution of continuity of the corneal epithelium, this may happen in the cornea, and the resulting opacity is then very difficult to deal with.

**Marquez** has obtained some success by use of the hyposulphite of soda, which has the power of dissolving chloride of silver. As a preliminary, he instills cocaine, thus producing desquamation of some at least of the corneal epithelium, and allowing the hyposulphite to gain entrance to the silver opacities. The strength of the hyposulphite solution recommended is 3 per cent.

HAROLD GRIMSDALE.

(8) **Judin** gives the literature references to 47 cases of eye disease due to atoxyl and 3 to arsacetin, a derivative of atoxyl. Ehrlich reported that arsacetin was less poisonous to animal cells than atoxyl, and more effective against the trypanosomes, but the hope of its freedom from danger to the optic nerves must be given up. Of the above 50 cases 35 went on to complete blindness. The case reported in this paper had been under treatment for typhus recurrens and received four subcutaneous injections of 0.6 arsacetin. The patient left hospital perfectly well, but a week later, the vision began to fail, and he was completely blind in another three weeks. Judin saw him a month later when the optic nerves were atrophied, the retinal arteries narrowed, vision was *nil*, and pupillary reactions were lost. Subcutaneous injections 5 per cent. sodium nitrate, as recommended by Rosenfeld, failed to improve matters and the patient left as he had entered. It is urged that atoxyl and its derivatives should be given up in diseases with slight mortality, as typhus recurrens, syphilis, and the skin affections psoriasis, lichen ruber, etc.

W. B. INGLIS POLLOCK.

(9) This note gives the history of another case of this paralysis, which seems to be always transitory. **Marques** thinks that the cause of the paralysis is probably the acoin employed in the injection.

HAROLD GRIMSDALE.

(10) **Orloff** has had partial success in the treatment of spring catarrh by using Noqe's clamp-forceps as a means of inducing hyperæmia of the eyelid. He suggests that others should try the method, which is extremely simple and apparently not acutely painful.

ERNEST THOMSON.

(11) **Stephenson**, of London, praises two remedies in cases of interstitial



keratitis, namely, atoxyl and thyroid gland. He relates his experiences with these internal remedies, and speaks well of them both.

(12) The acid hydrobromate of codein, a product not yet found in commerce, is recommended by **Bonsignorio** as a substitute for dionine. The remedy is formed by the combination of codein either with bromine or with hydrobromic acid. It contains 33.47 per cent. of bromine, and one part dissolves in fifty parts of water\*. It is soluble in alcohol, but insoluble in ether. The new agent acts in a way similar to but milder than dionine. While its lymphagogue action is pronounced, yet it never produces so much pain and chemosis as does dionine. Its effects show themselves two or three minutes after it has been applied to the conjunctiva, and disappear completely within an hour after they have reached their apogee. The acid hydrobromate of codein is employed in a 1 per cent. to 5 per cent. aqueous solution.

SYDNEY STEPHENSON.

(13) **Bride**, of Manchester, has investigated clinically the respective advantages of silver nitrate (2.2 per cent.), protargol (10 per cent.), and argyrol (25 per cent.). Seventy-one cases of catarrhal and muco-purulent conjunctivitis were selected for the experiment. Bride concluded that although silver nitrate was the most valuable remedy at our disposal in cases of acute catarrhal conjunctivitis, yet its use was negatived, except in severe cases, on account of the extreme pain it caused. Argyrol was a better preparation of silver than protargol, inasmuch as its application was painless. The bactericidal action of silver nitrate and protargol does not appear to be of importance, since argyrol, which is not bactericidal, is a somewhat better preparation than protargol, which is bactericidal. Finally, Bride was unable to prove that the clinical value of the three preparations of silver was in direct ratio to their richness in silver.

SYDNEY STEPHENSON.

(14) **Chance**, of Philadelphia, believes that some confusion exists in the minds of practitioners, as well as of other individuals, as to the numerous uses of mercury in diseases of the eye. He protests against the common notion that "mercury" means "specific disease." He glances at its employment in various disorders of the eye, and describes the several ways in which it may be administered.

SYDNEY STEPHENSON.

(15) **Davis**, of New York, reports in some detail four cases where panophthalmitis was apparently prevented by the use of argyrol. The method was to evacuate pus from the anterior chamber, and, then, to inject a few drops of argyrol (10 per cent. to 20 per cent.) into the latter. A similar line of treatment, it appears, has been adopted by Wüdemann and E. S. Thomson. Davis glances at Schirmer's treatment by intensive mercurialization, and also at bacterial and serum therapy. He discusses the virtue of specific and non-specific sera respectively. The following are his conclusions:—  
1. In the treatment of infective processes of the eye, especially in those due to traumatism, perforating wounds, post-operative infection, etc., the well-established methods of treatment, medicinal and surgical, must yet hold a prominent place in the attempt to relieve these desperate conditions.  
2. Argyrol, in solutions from 2 per cent. to 30 per cent., may be safely injected into the anterior chamber, and seems to be of marked value in arresting virulently infective processes, such as hypopyon-keratitis, iritis, wound infections, and post-operative infections.  
3. Serum and vaccine therapy have proved of benefit in certain infective processes, but in the more virulent forms they should not be relied upon exclusively, especially in the

\*Solutions stronger than 2 per cent., must be prepared with the aid of heat. In order to keep well, such solutions should be made with an alkaline medium, as sodium bicarbonate or benzoate. 2 per cent. solutions, however, are quite stable when prepared in the ordinary way.



deep infections of the eyes and where the vitreous is involved. 4. A combination of medicinal, surgical, and serum therapy, holds out the best hope for recovery in the most serious cases, and all three should be tried when available.

SYDNEY STEPHENSON.

(16) **Roure** (Valence) commences by giving the credit of the first employment of high frequency currents in glaucoma to Truc, Imbert, and Marques (*Revue Générale d'Ophthalmologie*, 1906). Premising that such treatment is out of the question in cases where there is obstruction of the excretory channels, and that it is only in cases associated with arterial high tension that good might be expected, he relates a case which he treated by high frequency currents arranged after the manner of Guilleminot (details given). The patient was a woman, aged sixty years, with ocular tension +2 and arterial tension 210 millimetres. Myotic treatment had failed to relieve the pain. Vision was only quantitative. She was submitted to high frequency currents for ten to fifteen minutes twice weekly. After eight sittings the arterial tension was 140 mm., and the ocular tension nearly normal. Pain had almost gone. Vision, of course, was not improved. At the end of a year the pain returned. The patient preferred excision to the temporary amelioration to be expected by further treatment. Nevertheless, the relatively durable effect of the high frequency treatment in this case is important.

ERNEST THOMSON.

(17) **Terson** (Paris) follows his father in his enthusiasm for jequirity when used in suitable cases. He sums up as follows:—

(1) Jequirity is the best clearer of a cornea, the pannus of which does not yield to the cure of the tarso-conjunctival trachoma; it is the remedy *in extremis* which has an *elective* action on the pannus and on nothing but the pannus.

(2) It is, to say the least, useless when corneal improvement visibly follows tarsal improvement.

(3) Always commence with an application of the powder limited to *three* minutes, with the object of ascertaining the intensity of the resulting reaction; follow the application with very careful washing-out.

(4) All pus formation should have been got rid of beforehand. The remedy is only applicable to dry trachoma (*trachome sec*), and when the cornea is protected by a thick fleshy pannus. Acute trachoma is not benefited by it.

(5) Cupric glycerine is the best remedy after the cessation of the jequirity conjunctivitis.

ERNEST THOMSON.

(18) Eusemin, a solution of cocaine and adrenaline and chloretone in physiological salt solution, was employed by Cohn some years ago as a local anæsthetic in eye work (see THE OPHTHALMOSCOPE, 1905, p. 246). It has also been employed by the reviewer. **Weiss**, of Gmünd, speaks highly of the agent, especially in such operations as advancement of ocular muscles and extirpation of the lacrymal sac. After eusemin has been injected beneath skin or conjunctiva, ten minutes should be allowed to elapse before operation is commenced. In extremely nervous and restless subjects, Weiss injects morphia half an hour prior to operation.

SYDNEY STEPHENSON.

## BOOK NOTICES.

**Dictionary of Ophthalmic Terms, with Supplement.** By EDWARD MAGENNIS, M.D., D.P.H. Bristol: John Wright and Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. Price 2s. 6d.

This little book of 67 small pages will go into the waistcoat pocket. The dictionary portion is well intended, and, although we do not pretend to have gone right through it, seems to be correct on the whole; yet in the course of a casual inspection we found the item "Heterotrophia. See Strabismus." That "h" *will* creep somehow into words that sound anything like "atrophy." We looked up "strabismus" and failed to find the word; then, finally, turned to "squint," only to find "see strabismus."

The supplement contains paragraphs on "abbreviations and symbols," some of which are incorrect, "mydriatics," giving the duration of effect, "approximate equivalents" of weights and measures, "directions for testing the vision" and "formulae for some of the commoner diseases of the eye," which latter paragraph includes the local application of potassium iodide for the arrest of cataract. What the object can be of including in a dictionary of ophthalmic terms, not only directions for testing, but also for correcting, errors of refraction within the compass of six pages of waistcoat pocket size, we are entirely unable to conceive. But the dictionary part, barring mistakes, is likely to be useful. ERNEST THOMSON.

**Accidents Oculaires provoques par l'Electricité. (Ocular Injuries caused by Electricity).** By Dr. A. VAN LINT. Brussels: L. Severeyns. 1909.

With the increasing use of electricity in many departments of every-day activity, and in view of modern legal provisions for compensation in cases of injury, it is well that we should be reminded of the fact that there has arisen, within recent years, what is practically a new class of injuries, whose frequency and variety are likely still further to increase.

Such injuries have as yet received little recognition in the systematic text-books of ophthalmology. We are therefore indebted to Dr. van Lint for giving us in this work a most interesting account of the symptomatology, pathogenesis, and treatment of the injuries caused by electricity in its varied forms, derived from a study of many published and a number of hitherto unpublished cases.

In the first section the author deals with injuries caused by lightning. One of the most interesting of the resulting lesions is cataract, and a comparison of the many reported cases shows that it is in the great majority of cases a bilateral lesion, that it takes some time (days, weeks, or months), for its development, and that in a relatively large number of cases it undergoes spontaneous cure.

Probably of greater interest in an industrial country like ours, are the chapters which deal with the accidents to which workmen are liable from exposure to electric light, from the electric arc used in the welding of metals, and from the occurrence of short-circuiting. Cases under the latter heading are divided into two categories according as the short-circuit takes place through the body of the victim or merely produces a violent discharge in his immediate neighbourhood. Naturally, the results, both for the eyes and for the body as a whole, are much more serious in the former than in the latter

class. Here, again, cataract is one of the important lesions, and it differs from that produced by lightning in that it is usually unilateral, and rapidly comes to maturity. An interesting unpublished case of Schirmer's is described, in which there were choroidal changes closely resembling those which have been experimentally produced in animals by the passage of electric discharges through their bodies. Several difficult problems of diagnosis and prognosis arise in connection with these cases, especially when they are under review with a view to compensation, but a consideration of the cases here discussed will at least show how guarded opinion should be while our knowledge of the conditions is so imperfect.

The possibility of trouble arising from the use of electricity for wireless telegraphy, is indicated in a short chapter which follows, chiefly referring to some cases reported by Bellile in which ocular symptoms were supposed to be due to that cause.

The next section deals with a more familiar subject, the ocular lesions resulting from exposure to electric light, and a final chapter is devoted to a matter of some importance, namely, the injuries which may result from the therapeutic uses of electricity, such as X-rays, electrolysis, the galvanic current, fulguration, and phototherapy.

In discussing the pathogenesis of electrical injuries the author finds it convenient to divide them into groups, the first including those due to lightning and those due to the production of a short-circuit through the body, and the second comprising the cases in which the injury is caused by an electric discharge not passing through the body. In the first group the lesions involve the deeper as well as the more superficial parts of the eye, and are chiefly due to catalytic and photo-chemical action. In the second group the deeper parts of the eye are more immune, possibly to some extent because of the fact that the lens absorbs and prevents the passage of the ultra-violet rays.

The concluding section of the book deals briefly with treatment, which is mainly symptomatic.

A bibliography and table of contents are appended; but an index would add considerably to the usefulness of the book as a work of reference.

A. J. BALLANTYNE.

**The Royal London Ophthalmic Hospital Reports.** Volume XVIII, Part I. January, 1910. London: J. & A. Churchill, 7, Great Marlborough Street, W. Price 5s. net.

The present is an unusually good volume of the Moorfields Hospital *Reports*. It contains nine communications by Collins, Inouye, Fisher, Worth, Hepburn, Hancock, Coulter and Coats, and Hudson respectively. It is lavishly illustrated.

**Transactions of the American Ophthalmological Society, Forty-fifth Annual Meeting, New London, Conn. 1909.** Volume XII, Part I. Philadelphia: American Ophthalmological Society. 1909.

This volume of the *Transactions of the American Ophthalmological Society* contains numerous more or less valuable communications, and, as usual, is liberally illustrated. An interesting feature is the account given of those members of the Society (illustrated with photographs) who have died since the last meeting. The sad list includes the names of Gustavus Hay (Boston), Daniel Bennett, St. John Roosa (New York), William Thomson (Philadelphia), and Richard Henry Derby (New York). R.I.P.

**Manual of Diseases of the Eye.** For students and general practitioners. By CHARLES H. MAY, M.D., Attending Ophthalmic Surgeon to the Mount Sinai Hospital; Consulting Ophthalmologist to the French Hospital, to the Gouverneur Hospital, to the Red Cross Hospital, and to the Italian Hospital. Sixth edition, revised, with 362 original illustrations, including 22 plates, with 62 coloured figures. New York: William Wood & Co. 1909.

Dr. Charles H. May's *Manual* is, without doubt, one of the very best short books on ophthalmology, as it is, equally without doubt, one of the most popular. The sixth edition, now before us, has been carefully revised, and several new paragraphs dealing with such subjects as transillumination, the ophthalmic reaction, and cerebral decompression in cases of choked disc, have been added. The illustrations, always a feature of May's book, are, upon the whole, extremely good. May's *Manual of the Diseases of the Eye* may be confidently recommended to a beginner in ophthalmology.

**Beiträge zur Trachom-Forschung. (Contributions to Trachoma Investigations.)** Jena: Verlag von Gustav Fischer. 1909.

This *brochure* of ninety-two pages contains several communications dealing with the investigation of trachoma reprinted from the *Klinischen Jahrbuch*, edited by Drs. Naumann and Kirchner. 1. Professor R. Greeff.—The infectivity of trachoma. 2. Dr. M. Hartman.—Investigations into the aetiology of trachoma. 3. Dr. Cesare di Santo.—Investigations into the so-called "trachoma bodies." 4. Dr. W. Clausen.—How can trachoma bodies be recognised? 5. Professor Greeff.—The invasion by trachoma of the District of Arnsberg. 6. Dr. Richard Buchwald.—The spreading of trachoma in the Province of Posen. The book is illustrated with three lithographic plates.

SYDNEY STEPHENSON.

**Bulletins et Mémoires de la Société Française d'Ophtalmologie.** Vingt-sixième année. Paris: G. Steinheil, 2, Rue Casimir-Delavigne. 1909.

This volume of 545 pages represents the proceedings of the French Ophthalmological Society at its annual meeting held in Paris from May 3rd to May 6th, 1909. About 200 of its pages are occupied by Parisotti's monograph upon Keratoconus (see THE OPHTHALMOSCOPE, October, 1909, p. 714) and the discussion upon that interesting affection by Antonelli, Polack, Terson, Jocqs, Coppez, Bourgeois, Péchin, Vacher, de Lapersonne, Sauvinau, Cabannes, Sulzer, Deschamps, Louis Dor, Lagrange, Wickerkiewicz, Grandclément, Rochon-Duvigneaud, Koenig, Salva, Landolt, Chaillous, and Holth. The remainder of the volume is made up of various communications, many of which have already been abstracted in these columns.

**Urgent Surgery.** By FÉLIX LEJARS. Translated from the sixth French edition by WILLIAM S. DICKIE. Volume I. Bristol: John Wright and Sons, Limited. 1909.

A few pages of Dr. Lejars' *Urgent Surgery* are devoted to "Some points in urgent surgery of the eyes." The removal of foreign bodies, and the treatment of burns and wounds and ruptures of the cornea and sclerotic are described. The operations of enucleation and of evisceration are also



described. By the way, in removing the eyeball, Tillaux's method is recommended. The external rectus is first divided, the optic nerve is next cut, the remaining muscles are then severed, and, finally, the conjunctiva is divided. Figure 122, which is intended to show the first stage in Tillaux's operation, is incorrect, since the fixation forceps, instead of rotating the eyeball inwards, are drawn as if effecting the opposite movement. Paracentesis and iridectomy are the other operations upon the eye taken up by Dr. Lejars. Figure 128, showing paracentesis by means of Graefe's knife, conveys the impression that the blade of the instrument is passed behind instead of in front of the iris. The text, however, is quite unambiguous. Iridectomy is described as an urgency operation in cases of acute typical glaucoma. Under the circumstances this becomes one of the most delicate and difficult operations in the whole range of ophthalmic surgery. We question, indeed, the wisdom of its inclusion in a book devoted to urgent surgery. It would, we think, have been better to describe the simple operation of posterior sclerotomy (well within the reach of any practical surgeon), in order to tide over the interval until such time as the services of an expert could be obtained to perform the more difficult operation of iridectomy. "Rochon-Duvigneaud" on page 108 (foot-note) should be "Rochon-Duvigneaud."

SYDNEY STEPHENSON.

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## CORRESPONDENCE.

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### A METHOD OF CATARACT EXTRACTION WITH THE RETENTION OF A CORNEAL CONJUNCTIVAL BRIDGE.

*To the Editor of the THE OPHTHALMOSCOPE.*

DEAR SIR,

There must be hundreds of your subscribers who know that the sub-conjunctival cataract operation described by Dr. Cluckie in your November number is the same as that described by Pansier in 1899 (*Annales d'Oculistique*, CXXII, 267 and CXXV, 166) though it had originally been practised by Desmarres in 1851, and then by Hasner in 1873. Vacher described it again shortly after Pansier. Then came the more elaborate sub-conjunctival pouch operation described by Czermak. Why an operation which has been so thoroughly exploited and which, off-hand, has so much in its favor, has found no permanent adherents is hard to say for one who has never tried it. One may hazard the surmise that the explanation is to be found in the difficulties which it must entail on the expression both of the nucleus and of the lens *débris*. By the way, why should we continue to say cataract "extraction" when we mean cataract "expression?"

Your faithfully,

H. GIFFORD, M.D.

OMAHA, NEBRASKA, U.S.A.  
*December 17th, 1909.*

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## NOTES AND ECHOES.

## Obituary.

As briefly announced in THE OPHTHALMOSCOPE of last month, that master of ophthalmology, Theodor Saemisch, passed away, full of years and of honours, on November 29th, 1909. Saemisch was born in 1833 at Luckau. He graduated doctor of medicine at Berlin in 1854. He worked with Albrecht von Graefe in that city, but was afterwards assistant in the Wiesbaden eye hospital, then controlled by Alexander Pagenstecher. In the year 1862 began his connection with Bonn, destined to be long and fruitful. In 1873 the newly-instituted professorship of ophthalmology was bestowed upon him, and to the end Saemisch remained faithful to the University of that pleasant Rhine town, despite several calls to other seats of learning. Saemisch's list of contributions to ophthalmology was a long one. Two stand out pre-eminently, namely, his contribution on spring catarrh and on hypopyon-keratitis. The latter clinical study, which was published in the year 1870, gave for the first time a thorough description of the disease, and also introduced to the notice of the medical profession the operation now commonly known as "Saemisch's section." Saemisch's life monument is to be found in the famous Graefe-Saemisch *Handbuch der gesamten Augenheilkunde*, published from 1874 to 1877, in which Saemisch was responsible for the masterly article on cornea, conjunctiva, and sclera. In 1892 Saemisch was appointed Rector of the University of Bonn. Eleven years later he had the happiness of opening the new University *Augenklinik* at Bonn, a modern building designed after his own ideas of what such a place should be. Four years after this event, Saemisch resigned his professorship, in order to complete the new edition of the *Handbuch*, now nearing completion, but this he was unhappily never destined to do.

In a subsequent issue we hope to publish some notes as to the career of Dr. Erik Johann Widmark, professor of ophthalmology in Stockholm, whose death we regret to announce.

\* \* \* \*

## Appointments.

A. C. Hudson has been appointed curator and librarian to the Royal London Ophthalmic Hospital (Moorfields), to which institution E. P. Minett has been appointed bacteriologist.

A. Stanford Morton has been appointed consulting ophthalmic surgeon to the Central London Throat and Ear Hospital.

John M. Wheeler has been appointed assistant surgeon in the ophthalmological department of the Massachusetts Charitable Eye and Ear Infirmary.

Samuel Z. Shope has been appointed surgeon-in-charge of the eye, ear, nose, and throat department of the Harrisburg Polyclinic Hospital.

Albrecht Collasowicz has been appointed oculist to the Alexian Brothers Hospital, St. Louis.

Robert Sattler, Derrick T. Vail, and Victor Rag have been appointed ophthalmic surgeons to the Cincinnati Hospital for the year 1910.

Richard Kummel has been recognized as *privat-dozent* of ophthalmology at Erlangen.

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## Testimonial to Professor Motais.

An influential committee, the president of which is Dr. Jagor, has been formed to collect subscriptions for the purpose of presenting Professor Motais, of Angers, with a testimonial on the occasion of his recent nomination to the grade of *Chevalier de la Légion d'Honneur*.

## A New Ophthalmic Department.

THE Governors of the Worthing Hospital, England, recently decided to establish an ophthalmic department. A rule was accordingly passed increasing the number of the medical officers to eight, one of whom is to be specially appointed to look after the work of the new department.

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## Awards

THE Meynot Prize of 2,600 francs for the best work on diseases of the eye has been awarded to Dr. A. F. Terrien, of Paris, for his *Précis of Ophthalmology* and his *Syphilis of the Eye*. An award of 1,500 francs in connection with the Montyon Prize of the Paris *Académie des Sciences* has been made to Drs. H. Truc (Montpellier) and P. Chavernac (Marseilles) on account of their work, *Hygiène Oculaire et Inspection Oculistique des Ecoles*.

\* \* \* \*

## Ophthalmia Neonatorum in New York and elsewhere.

THE State Health Department of New York has commenced the gratuitous distribution of tubes which contain a solution of silver nitrate for the prophylaxis of ophthalmia neonatorum. The solution is put up by the State Hygienic Laboratory at Albany, and is sent to health officers and to such physicians as have subscribed to the departmental pledge to use an efficient prophylactic in all cases of birth attended by them. The "pledge," by the way, runs as follows: "The undersigned, realising the importance of the prevention of ophthalmia neonatorum, pledges himself, in the interests of humanity, personally to adopt some approved method of prophylaxis in his obstetric practice and to use his influence to secure the co-operation of his professional associates to the same end."

The Annual Report of the Aberdeen Eye Institution, dealing with the year ended 30th June, 1909, has reached us. From the remarks made by the honorary surgeon, Dr. A. Rudolf Galloway, we gather that the cases of ophthalmia neonatorum have decreased during the year from sixteen to eight. One blind baby, however, was seen when all hope of sight was lost. "There is no doubt," writes Dr. Galloway, "in view of the inevitable life of blindness that follows an unrecognised or imperfectly treated case of this kind, that this disease should be made notifiable by the Public Health Authorities, and instructions should be issued to midwives and all others who have to deal with a newly-born child."

\* \* \* \*

## Refraction for General Practitioners.

AT a recent meeting of the Ophthalmic Section of the American Medical Association, a committee of three, with Dr. Leartus Connor as Chairman, was appointed for the purpose of promoting a working knowledge of simple refraction cases among general practitioners of medicine. The Committee urged that every State Board of Registration should follow the example set by the Michigan Board, namely, to insist that licences should be granted only to such applicants as were able to demonstrate their ability to correct simple cases of refraction. The natural outcome of this action, if generally adopted, would be to compel every medical school to qualify its students in this branch of medical work.

\* \* \* \*

Duke  
Karl Theodore.

AN interesting bit of medical history is related in a recent number (December 16th, 1909) of our contemporary, the *Boston Medical and Surgical Journal*. By the transfer of certain property in the city of Boston, a fund amounting to about 100,000 dollars will ultimately become available for the Harvard Medical School. It appears that a Miss Lowell, who had made a competence in millinery, was taken ill while travelling on the Continent, and at Munich came under the medical care of the late Duke Karl Theodore. So much was she impressed by the services rendered by the royal ophthalmic surgeon to suffering humanity that upon her return to Boston Miss Lowell's estate was left in trust for the benefit of some school of medicine.

\* \* \* \*

The Discovery of  
Cocaine.

THE American Ophthalmological Society has conveyed a graceful compliment to Dr. Carl Koller on the occasion of the twenty-fifth anniversary of the discovery of cocaine. The resolution adopted ran as follows: "Whereas, it is now a quarter of a century since the discovery of the anesthetic properties of cocaine, and whereas, during these years its value has been proved by the relief from pain given to thousands of persons in all parts of the world, especially those suffering from diseases of the eye, and, whereas, the operative methods of all ophthalmic and other surgeons have thus been much facilitated and their results rendered far more satisfactory; therefore, as a Society, we desire to place on record our appreciation of the great value of this agent, and our indebtedness to its discoverer, Dr. Carl Koller, of New York, and we hereby empower our Secretary to join with the Secretaries of other similar National Societies in transmitting to Dr. Koller our thanks for this boon conferred on mankind and for the advance thus made in the science of ophthalmology."

\* \* \* \*

Faculty of Physicians  
and Surgeons, Glasgow.

AT an Extraordinary Meeting of the Faculty of Physicians and Surgeons, Glasgow, held on the 28th December last, the President, Mr. D. N. Knox, read a letter from Lord Pentland, the Secretary for Scotland, intimating that His Majesty the King has signified his pleasure that the word "Royal" be prefixed to the title of the Faculty.—The Faculty was founded by Royal Charter in 1599.

\* \* \* \*

Moorfields Annual  
Dinner.

THE Annual Dinner of the past and present students of the Royal London Ophthalmic Hospital was held at the Trocadero Restaurant, on January 26th, under the chairmanship of Mr. Edward Nettleship, consulting surgeon to the Hospital.

\* \* \* \*

British Medical  
Association.

THE Annual Meeting of the British Medical Association, as most readers are aware, will be held in London from the 22nd to the 29th of July next. The sessional meetings are on the 27th, 28th, and 29th. The officers of the section of ophthalmology are as follows: President—Charles Higgens, London. Vice-Presidents—Major Robert H. Elliot, I.M.S., Madras; Henry L. Ferguson, Dunedin; Cecil E. Shaw, Belfast; George Wm. Thompson, London. Honorary Secretaries—N. Bishop Harman, 108, Harley Street, W.; Arthur Henry Haven Sinclair, 5, Walker Street, Edinburgh.

\* \* \* \*



Professor Leber. PROFESSOR LEBER, of Heidelberg, will celebrate his seventieth birthday on February 28th next. On this occasion his friends and his pupils propose to erect his bust in the Heidelberg *klinik*.

\* \* \* \*

Blind Man's Gift. MR. JOHN MACKIE ELLIOTT, of Prospect Street, Gateshead, Durham, who was blind for the greater part of his life, left about £10,000 of an estate of £12,143 for the benefit of the blind. The money is to be used for the maintenance and education of blind people in Newcastle or Gateshead to help them to become self-supporting.

\* \* \* \*

The Treatment of School Children. PENDING some settlement of the vexed question of the medical treatment of elementary school children, we note that a Mr. C. J. H. Gunning has been appointed ophthalmic clinical assistant for *London County Council purposes* at St. George's Hospital, London. The italics are our own.

\* \* \* \*

Honours. THE title of *Sanitätsrat* has been bestowed upon Dr. Karl Meurer, the well-known ophthalmic surgeon of Wiesbaden.

Dr. Fritz Salzer, *privat-dozent*, has received the title and rank of extraordinary professor of ophthalmology at Munich.

\* \* \* \*

Mr. Marcus Gunn's Estate. MR. MARCUS GUNN, whose recent demise we all deplore, has left property valued at £28,193.

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The Strasburg Appointment. PROFESSOR A. SIEGRIST, director of the University Eye Clinique at Berne, has declined an invitation to Strasburg, as successor in the Chair of Ophthalmology to Professor Schirmer. The appointment, which carries with it the directorate of the University Ophthalmic *Klinik*, has been offered to Professor E. Hertel, first assistant in the Jena *Augenklinik*.

\* \* \* \*

The Vienna Vacancy. AMONG names mentioned in connection with the vacancy in the I Vienna University *Augenklinik* are those of Professors Hess (Würzburg), Dimmer (Graz), and Bernheimer (Innsbruck).

\* \* \* \*

Paris Ophthalmological Society. THE following are the names of the office-bearers of the Paris Ophthalmological Society for the year 1910:— President, Chevallereau; Vice-president, Morax; General Secretary, Rochon-Duvigneaud; Treasurer, Dubois de Lavignerie; Secretaries, Monthus and Cantonnet.

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# THE OPHTHALMOSCOPE.

A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

VOL. VIII.—No. 3.

MARCH 1, 1910.

TWO SHILLINGS.

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## ORIGINAL COMMUNICATIONS.

## EYE SIGNS AND SYMPTOMS ASSOCIATED WITH NERVOUS DISEASES.\*

BY

JAMES TAYLOR, M.A., M.D., F.R.C.P.,

PHYSICIAN TO THE NATIONAL HOSPITAL FOR PARALYSIS AND EPILEPSY, QUEEN SQUARE, LONDON,  
AND TO THE MOORFIELDS EYE HOSPITAL, LONDON, E.C.

IN considering such a subject as the eye signs and symptoms associated with nervous disease, it will be well in order to get a comprehensive, if somewhat superficial, view of such a wide subject, to divide these signs and symptoms into four groups according as they arise in connection with :

1. The pupil.
2. Ocular movements and diplopia.
3. Modifications of the field of vision.
4. Changes in the fundus.

1.—Inequality of pupils in itself is of no particular significance. It is present in a certain number of people unassociated with other signs and without the presence of symptoms, so that it is often discovered accidentally. In some cases it is probably due to some slight affection of the sympathetic, *e.g.*, pressure from enlarged cervical glands. And, of course, it is frequently present in cases of aneurism of the aorta. Eccentricity of the pupil occurs in certain nervous conditions: thus, in disseminated sclerosis it is not unusual to have changes occurring both in the shape of the pupil and also in its position.

But of all conditions of the pupil that in which it does not respond to light stimulus while still contracting during accommodation—the Argyll Robertson phenomenon—is by far the most important and significant. When this is present, the pupils are nearly always unequal; sometimes they are exceedingly small; sometimes nothing unusual is noted in the size; in some instances they are dilated. Occasionally, the phenomenon is unilateral, but, as a rule, both pupils are similarly affected.

This condition of pupil was first described in association with tabes dorsalis, and that is the disease in which it most characteristically occurs. It is by no means constant in tabes but so frequent that one cannot help feeling that the cases of tabes in which it does *not* occur deserve special study and consideration, especially in reference to their ætiology. Another condition in which it is sometimes met with is hemiplegia. When this is the case the hemiplegia is the result of thrombosis occurring in a vessel the seat of endarteritis obliterans. I have also known it present in at least two cases in which there was severe muscular atrophy in the upper limb muscles, especially those about the shoulder girdle. These cases differed from ordinary cases of progressive muscular atrophy in the fact that the atrophy after reaching a certain stage ceased to be progressive, and there was reason to believe that it was the result of a gummatous inflammation involving certain nerve roots. I have also known the Argyll Robertson pupil present in association with paralysis of one third nerve on two occasions. In both cases the paralysis of the third nerve cleared up under the influence of anti-syphilitic remedies, but the patients

\*A lecture delivered at the Polyclinic, London, W.C., on 27th January, 1910.

afterwards became the subjects of general paralysis of the insane. And this naturally leads to the remark that in cases in which the Argyll Robertson phenomenon is present which are not cases of tabes there is always the possibility, if not the likelihood, that these are cases of early general paralysis of the insane, for the phenomenon which we are considering is probably more constant in that disease even than in tabes. In this relation it is well to remember that in accordance with the researches and the teaching of Dr. F. W. Mott, it is probably correct to regard both these diseases as really identical in their ætiology and in their essential characters, each being a parasymphilitic degeneration—the degeneration in the distinctive cases affecting different parts of the nervous system, although it is notorious that many patients with general paralysis have definite tabetic signs and symptoms, and that many cases of tabes ultimately display the mental symptoms of general paralysis. But it must also be remembered that the Argyll Robertson pupil may be present, and remain present without the association of any other signs or symptoms. I know at least one patient who during the last fifteen years has had unequal Argyll Robertson pupils, but so far he has developed no other sign, except nerve deafness; so that on seeing this phenomenon alone one must not at once conclude that the patient will necessarily and soon develop some grave organic nervous disease.

It may have been noticed that it is assumed that the Argyll Robertson phenomenon is a late result of syphilis—a parasymphilitic phenomenon. I think it is justifiable to make this assumption when one remembers that one is able to get a history of syphilis in a larger percentage of cases with Argyll Robertson pupils than one is able to get in cases of skin disease which are recognized as undoubtedly syphilitic. As to the lesion giving rise to the phenomenon, various theories have been promulgated. The latest is that it is the result of degenerative changes in the ciliary ganglion. I shall only mention this. It is not an occasion on which to discuss it.

The condition of the pupil so frequently present in post-diphtheritic paralysis should be mentioned. There is paralysis of accommodation, so that the patient is unable to read. It is often an early sign, and quickly passes off.

2.—The second condition which we have to consider is that of diplopia and paralysis of ocular muscles. One of the early and common symptoms in disseminated sclerosis is diplopia. Sometimes this depends upon obvious weakness of one muscle, especially the external rectus; sometimes the true cause of the diplopia can only be discovered by careful testing and the interpretation of the images. Paralysis of one external rectus is not uncommon as an isolated phenomenon—depending apparently on a neuritis of the sixth nerve, probably similar in origin to the so-called rheumatic facial paralysis (Bell's paralysis). In such a case the paralysis is of no significance, and usually clears up quickly. Always, however, weakness of the sixth nerve should suggest the possibility of other signs indicative of nervous disease, and it necessitates a careful examination of the nervous system. It may, *e.g.*, be an early indication of diphtheritic paralysis, and the history may throw light on this, and the condition of the palate and pharynx as regards swallowing and phonation, the condition of accommodation, and the state of the knee jerks should all be carefully examined. Sometimes also weakness of the sixth is an early sign in tabes, and the pupils and knee jerks must be examined and the history enquired into, especially in reference to the occurrence of what are so often called "rheumatic" pains, which so often are "lightning pains." Again, weakness or paralysis of the sixth nerve is often a result of intracranial pressure, and the signs and symptoms of increased intracranial pressure from tumour or meningitis should be carefully sought for.



Similarly, weakness or paralysis of one branch of the third nerve or of all its branches is occasionally an isolated phenomenon. Gumma of the nerve trunk is a common cause of paralysis giving rise to ptosis, weakness of the superior, inferior, and internal recti, perhaps also to dilatation of the pupil. In such a case the presence of the Argyll Robertson pupil is of great importance, even if unassociated with loss of knee jerk. It is strongly suggestive of the syphilitic origin of the paralysis, and it should always be remembered that although tabes and general paralysis are, except in very acute cases, quite unresponsive to treatment by iodide and mercury, such third nerve paralysis, even in well marked instances of those diseases, frequently clears up completely under the effects of those drugs.

Unilateral third nerve paralysis is also present in a curious condition known as *migraine ophthalmoplégique*. In this condition—not one of true migraine—the paralysis is usually ushered in by a severe attack of hemicrania. After the headache has passed off the paralysis often clears up, but not completely. It recurs with a subsequent attack of headache, and the recovery is not then so complete. Recurrent attacks of headache are accompanied with recurrent paralysis of the nerve, and finally the patient is left with complete paralysis of the nerve, which is permanent. Such attacks of hemicrania with third nerve paralysis have been found to depend upon an actual growth in, or inflammation of, the third nerve, and probably this is the cause in all.

There are several conditions in which paralysis of ocular nerves of a partial character—affecting both eyes and affecting them unequally—may be present. Such a condition may apparently occur from poisons which usually affect peripheral nerves. Thus, in certain cases of severe alcoholic poisoning the movements of both eyes may be profoundly affected. In such cases the ocular paralysis is, I believe, always of very ominous significance. I have seen two such cases, and they have both ended fatally. It is interesting in this relation to remember that in cases of peripheral neuritis from alcohol, nystagmoid movements on deviation are very common, and it is suggested that these movements depend upon slight neuritic changes in the nerves subserving the movements, not severe enough to cause actual paralysis. In diphtheritic paralysis also we frequently meet with this ocular paralysis, usually affecting the eyes unequally. That also is probably peripheral in causation, and if the patient recovers it clears up completely.

Reference has already been made to the isolated paralysis of a third or sixth nerve, which may occur in tabes or as an early sign in general paralysis of the insane. These, as a rule, clear up completely under antisyphilitic remedies. But in some cases of tabes we meet with ocular palsies not confined to one nerve or even limited to one eye. These do not pass off, do not as a rule improve, and their onset is more gradual than is the case when the paralysis is limited to one nerve in one eye. The probability is that such conditions of ophthalmoplegia depend upon degeneration occurring in the cells of the ocular nuclei, changes analogous to those in the anterior horns of the spinal cord which underlie progressive muscular atrophy.

Diplopia is, of course, one of the commonest symptoms underlying intracranial disease. Its significance is great in regard to diagnosis. Thus, in tuberculous meningitis squinting and diplopia are among the commonest signs and symptoms, and depend upon involvement of the nerves at the base of the brain in the inflammatory process. In conditions of intracranial tumour diplopia is also common and weakness of ocular movements correspondingly frequent. When the deficiency in ocular movements depends upon weakness of one or of both external recti, little or no importance can be attached to this as an indication of the position of a growth, for the general increase in

intracranial pressure may be sufficient to give rise to weakness of both external recti, even in cases in which the tumour is in the cerebellum or in the frontal region. General weakness also in the muscles subserved by the third pair of nerves may arise from the same cause, but if one third nerve is affected definitely, especially if it is affected in all or most of its branches, such weakness *may* be of importance in regard to localization. In cases in which ocular movements are interfered with, and if this weakness is associated with facial weakness of the peripheral type, especially if the condition is in a child and has come on gradually with limb weakness and without optic neuritis, the probability is strong that if the case is one of intracranial growth it is one of those cases of infiltrating glioma of the pons which used to be known as cases of hypertrophy of the pons. I do not wish to underrate in any way the importance of defective ocular movements in cases of intracranial tumour, but I think it well to utter a word of warning against attaching too much importance to such signs as indicative of the *situation* of a tumour.

In the condition of *myasthenia gravis*, on which much attention and observation have recently been bestowed, we have paralysis of ocular movements present as an important feature. Indeed, many such cases seek advice at eye hospitals or from ophthalmic surgeons, and unless one is familiar with the features of the disease, their true nature is difficult to understand and may be utterly mistaken. At first, the only difficulty the patient may have is in keeping the eyes open. It is noticed that this difficulty is usually much greater when the patient is tired, or in pain, or distressed, or has been excited, even pleasurably. Thus, the ptosis in such a patient is worse in the evening than in the morning, and in women is worse at the monthly periods. With the ptosis there is associated defective ocular movement, usually in every direction, and by and by there is superadded, if it is not already present, difficulty in phonation and weakness in the limbs. The muscles of the limbs have the characteristic myasthenic reaction to a faradic current—at first responding well but gradually losing the power of contraction to the same or even a stronger current until it is at last impossible to elicit a contraction at all. The progress of the disease is sometimes very slow, for I have now patients under my observation who have suffered from it for years, in one case as many as fifteen. But sometimes it is very rapid, and I had recently a patient who died under my care, at Queen Square, who had first sought advice at Moorfields, only six months before her death. The ætiology of the condition is still obscure, but we know that even with our finest methods, no definite structural changes can be demonstrated in the nervous system.

Such a condition it is difficult, if not impossible, to distinguish clinically from the slow degeneration of cells in the ocular nuclei to which the name chronic ophthalmoplegia or poliomyelitis superior is given. The latter is distinguished by the fact that it is rarely fatal, that it usually occurs in older people, and that underlying it are changes in the nuclear cells similar to those in the anterior horn cells of the spinal cord, present in cases of progressive muscular atrophy.

Nystagmus is a condition which is of some importance, but it is not pathognomonic of any one condition. It is most characteristically present in cases of disseminated sclerosis, but it is not invariable in them, for a patient with definite disseminated sclerosis may not have nystagmus. Whenever it is present in disseminated sclerosis, it is usual to elicit a history of diplopia. Nystagmus also occurs, as already stated, in cases of alcoholic peripheral neuritis. Sometimes it is present only as a little nystagmoid jerking, but I have known it present in such a case in a form as well-marked as I have ever seen it in disseminated sclerosis. I need only refer to its presence in miners

and in association with choroidal atrophy, especially in amblyopic eyes, in albinos, and in eyes blind from any form of optic atrophy.

3.—The condition of the visual field is often of importance in reference especially to the diagnosis of the locality of a lesion in the brain. Homonymous hemianopia is the result of a lesion either in the occipital cortex or in the optic radiation in the posterior part of the internal capsule. If it is associated with hemiplegia it is usually indicative of lesion in the latter position, and in such a case of hemiplegia it will usually be found that sensation is impaired on the paralysed side and also that the leg is more paralysed than the arm. The reason for this is, of course, that in the internal capsule, the fibres subserving sensation for the opposite side of the body run in the most posterior part of the capsule and therefore nearest to the fibres of the optic radiation, and among the motor strands the fibres for the leg are the most posterior of all, behind those for the arm, which in their turn are behind those for the face.

Occasionally one sees in cases of hemiplegia, usually slight in degree, defects in the fields which are not hemiopic but quadrantic or approaching that character. This depends upon a partial lesion and usually indicates that the lesion is a cortical one. This is particularly the case should the defect be definitely quadrantic, for it is not so easy for a lesion so definite and so restricted as to cause a quadrantic defect to occur anywhere except in the cortex, where the area representing the fields of vision is much more spread out than the fibres are in the optic radiation at the posterior part of the internal capsule. Hence, if in any particular case a definitely quadrantic defect is present in the visual field, the lesion causing it is more likely to be a cortical one than one situated at the posterior end of the capsule where the fibres are all massed together in such a small area as to make it difficult for a lesion to occur causing anything less than a hemiopic defect.

Another character in fields of vision, which is of great significance, is that of bitemporal hemianopia, *i.e.*, a condition in which both temporal fields are impaired or absent. Such a defect from a single lesion can only arise at the chiasma. It is met with in tumours pressing upon the chiasma and these usually grow from the pituitary body. It is found also in cases of acromegaly, probably the result also of pressure on the chiasma from an enlarged pituitary.

It has also been stated that it may occur from a patch of retrobulbar neuritis affecting the chiasma. All these conditions are likely to result in a condition of primary optic atrophy with pale discs or impaired vision. It is noteworthy that tumours in this region rarely give rise to optic neuritis. I have seen only one case in which it was present and then only in a very mild degree. Not infrequently also when such a patient comes under observation one eye is totally blind. Occasionally, however, if the patient is intelligent and has been observant, it is possible to elicit a history showing that the loss of the temporal field in the blind eye had been noticed some time before the nasal field was lost and the eye became totally blind.

4.—We now come to consider the significance of fundus changes in the course of nervous diseases. The occurrence of disseminated choroidal atrophy need only be mentioned. It is found not infrequently in cases with other stigmata of congenital or late syphilis. It is also found in some cases of epilepsy in which there is nothing in the history to indicate a reason for epilepsy. I have found it present in the fundus in several such cases, when the fundus examination was undertaken merely in a routine way, and I think it is present in a larger number of cases of epilepsy than one would think. Similarly also albuminuric neuro-retinitis and diabetic neuro-retinitis are met with in certain cases of hemiplegia—both the paralysis and the retinal condition being no



doubt the result of vascular disease associated with the abnormality of the urine. The association of hemiplegia with albuminuric retinitis is, of course, much more frequent than with diabetic retinitis. With the latter a nervous condition not infrequently associated is melancholia—particularly in the Jewish race, in which glycosuria is so frequent.

With reference to the condition of optic neuritis it must be remembered that it may occur in association with blood states, *e.g.*, anæmia, albuminuria, etc., without nervous symptoms; in tuberculous meningitis (rarely in basic meningitis), as well as with intracranial tumour. The most intense optic neuritis I have ever seen, *viz.*, swelling of 11 D., was in a case of cerebral abscess. And I should be inclined to say that generally the most intense neuritis is met with in cases of cerebellar tumour, in which, too, probably because of the pressure on the iter and down into the foramen magnum, the intracranial pressure is apt to be very intense.

It is stated definitely by some observers that optic neuritis is likely to occur earlier and to be more intense on the side of the tumour. By others the exact opposite is stated. My own experience would lead me to think that not much importance is to be attached to either statement as indicating the side of the lesion. Out of ten cases of intracranial tumour observed by myself, the existence of the tumour being verified by operation or by *post-mortem* examination, the swelling was greater on the side of the tumour in four, greater on the opposite side in six. In one case of unilateral optic neuritis, in which the presence of tumour was verified both by operation and *post-mortem* examination, the neuritis was present on the left side alone, a tumour in the right hemisphere only. It will, therefore, be seen that it is not possible to attach much importance, so far as the localization of a tumour is concerned, to the earlier occurrence or the greater intensity of the neuritis on one or other side. I do not, of course, mean to say that the greater degree of swelling, or the occurrence of neuritis earlier on one side than on the other, is *without* significance. All I mean to say is, that we cannot, *as yet*, interpret such significance as must necessarily belong to it.

It not infrequently happens that in cases of optic neuritis, sudden loss of vision occurs for a short time. Without discussing the mechanism of this, it may be stated that it is always a somewhat ominous sign and that patients subject to this not infrequently die suddenly from respiratory failure, the result of sudden affection of the respiratory centre, probably the result of intense intracranial pressure.

One other point which cannot be too often emphasized is, that intense optic neuritis may be present even for weeks in a patient without any failure in vision. I have known a patient with 6 D. of swelling and optic neuritis in each eye retain during two months 6/5 of vision. This fact was pointed out many years ago by Dr. Hughlings Jackson. It is necessary to emphasize it, for one is occasionally still confronted with the statement in answer to a question—"No, he can't have any optic neuritis, for he can see quite well."

One point might be mentioned here, *viz.*, that intracranial tumour may exist without optic neuritis. This is particularly true of the cases of infiltrating tumour of the pons in children chiefly, but occasionally present in adults, the cases of so-called hypertrophy of the pons already alluded to. In these cases, presumably the process of infiltration and growth is so slow and gradual that almost complete disablement, and even death, may occur without optic neuritis having developed. It has already been mentioned that with pituitary tumour and signs of affection in the chiasma, optic atrophy, not neuritis, is the rule.

Optic atrophy is of common occurrence in nervous diseases. One need scarcely do more than refer to post-neuritic or consecutive atrophy. It is



merely an advanced stage of optic neuritis and has the same significance as that.

Primary optic atrophy is met with in tabes characteristically. As a rule, other tabetic symptoms are conspicuous by their absence, and tabetic patients of this class nearly always first seek advice at an eye hospital. Sometimes the knee-jerks are absent; sometimes they are present. I have known them disappear during the time they were under observation, but I have also known them persist for years. In such cases it should be remembered that optic atrophy is in some cases an early sign of general paralysis of the insane, as Dr. Mott pointed out some years ago. He found at Claybury Asylum a good many patients suffering from the mental symptoms of general paralysis who had been blind from optic atrophy for many years before the onset of any other symptoms.

Optic atrophy is also found in congenital tabes; occasionally in congenital general paralysis. It is rarely present in Friedrich's ataxy. I have known it in two cases.

The pale discs of disseminated sclerosis are often spoken of as atrophic. Many of these patients have perfect vision. In some it is impaired, especially in regard to colour, and the pallor is probably a sequel to retro-bulbar neuritis. This atrophy, if you like to call it so, is of a totally different character from the tabetic atrophy, for whereas the tabetic atrophy, in nine cases out of ten, leads to blindness, I have never known the atrophy of disseminated sclerosis lead to blindness; and I must have seen hundreds of cases.

I would again mention the fact that in pituitary tumours with bitemporal hemianopia, primary optic atrophy is the rule, and optic neuritis the exception.

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## FAMILY AMAUROTIC IDIOCY WITHOUT CHARACTERISTIC OPHTHALMOSCOPIC SIGNS.\*

BY

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THE child, M. A., female, aged 14 months, is not wasted, but is unable to sit up, and, owing to weakness in the muscles of the back and neck, its head (which seems rather large and heavy, and measures  $18\frac{1}{2}$  in. in circumference) falls backwards if not supported ("head-lolling"). It cannot move about; it cannot even turn or roll itself over in the bed from one side to the other. It can, of course, only be fed with fluids, and when it sucks from a feeding-bottle, the movements of its jaws appear automatic, rhythmic, and exaggerated; they suggest the automatic movements of a frog deprived of its cerebrum. Similar rhythmic movements of the jaws and mouth are sometimes present when the child is not feeding. It occasionally "swallows the wrong way." It generally lies apathetic or somnolent, taking no notice of anything unless disturbed by medical examination or otherwise, but will cry out when the feeding-bottle is removed. It never attempts to grasp or even to touch anything, not even the feeding-bottle. There is a variable amount of rigidity, due to tonic muscular spasm, affecting the trunk, and both upper and lower extremities. The lower

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extremities are often rigidly extended, with the feet in a tetany-like position; the upper extremities are flexed at the elbows, and the hands are often clenched, with the thumbs between the middle and index fingers. The knee-jerks can be obtained, and are at present rather exaggerated. No ankle clonus. The plantar reflexes tend, on the whole, to be of the extensor type (Babinski sign). The tendon reflexes of the upper extremities are present. There is vertical nystagmus, which varies much in degree from time to time: sometimes it is very well marked, rendering ophthalmoscopic examination difficult; sometimes it is temporarily absent.

Ophthalmoscopic examination (Dr. R. Gruber and Dr. C. Markus) shows nothing characteristic of family amaurotic idiocy. There is no pallor of the macular region with a cherry-red spot (corresponding to the fovea centralis) in the centre, such as was described first by Waren Tay in 1881, and then by B. Sachs in 1887, and has since been found to be present in nearly all (some say all the certain) cases of the disease. Both optic discs are rather pale, but not distinctly atrophic, and there is no evidence of past optic neuritis. The child is practically blind, although it can still perceive a bright light, and will occasionally follow an electric lamp with its eyes. The pupils react promptly to light.

There seems to be nothing abnormal in regard to cutaneous sensation, hearing, or taste. The child notices at once if its milk is unsweetened. The only teeth visible are the lower central incisors; there are no signs of rickets at the ribs or epiphyses. There is no evidence of disease in the abdominal or thoracic viscera, excepting some bronchitis, possibly connected with "swallowing the wrong way." Lately there has been variable fever. The urine is free from albumin and sugar.

The disease has been a very chronic one. According to the mother, the child was normal at birth and was suckled for the first five months. Weakness in the muscles of the back and neck, so that it could not hold up its head, was observed at three months of age. The mother does not know whether it could ever see properly. There is no history of convulsions or of any illnesses other than the present one.

The parents, both of them said to be healthy, are Jews, but there is no blood-relationship (consanguinity) between them. They have had six children, of which the present patient is the youngest. The mother says she has had no miscarriages. The eldest child is a girl, now aged 11 years, living and healthy. The second, a boy, is likewise living and healthy, aged  $9\frac{1}{2}$  years. The third, a girl, had the same disease, so at least the mother thinks, as the present patient, and died at one year of age in the mother's home; there was no necropsy. The fourth child was a boy (Ben A.), who likewise, according to the mother, suffered from the same disease; at the age of two years he was admitted with convulsions to the London Hospital on June 2nd, 1906, and died on the following day. Dr. H. L. Tidy, the Medical Registrar of the London Hospital, has kindly furnished the following notes of the case.—The head was  $20\frac{3}{4}$  in. in circumference, and the forehead large and square. There were no marked epiphyseal signs of rickets. The boy had been healthy at birth and had been breast-fed for the first twelve months. He had never been able to take solid food. The head had been inclined backwards since three months of age. He had had convulsions every few weeks since six months old. He had never been able to walk or talk. On admission to the London Hospital, the boy was quite stiff, the arms were in a tetany-like position, and the head was thrown back. There was a patch of pleural friction on the right side; afterwards the rigidity passed off and the child slept. Temperature,  $103\cdot6^{\circ}$  F. At the necropsy the lungs showed areas of collapse, and the

larynx contained vomit. A large pad of adenoids was found in the nasopharynx. There was internal hydrocephalus. The skull-cap was thin and the fontanelle was widely open. The brain weighed 54 oz. and the brain-substance was soft.

The fifth child, a male, appeared healthy at first, but died of bronchitis at the age of eleven months, in the mother's home. There was no necropsy.

### Remarks.

I think that the present case is almost certainly one of family amaurotic idiocy, possibly associated with internal hydrocephalus. The interesting point in the present case is that, as the typical ophthalmoscopic appearances of the disease are absent, and as there is no atrophy of the optic discs, it is unlikely that the amaurosis is connected either with local changes in the retina or with changes secondary to hydrocephalus (even if there be any hydrocephalus). The amaurosis is, therefore (in the present case), probably dependent on the diffuse changes (atrophy of ganglion cells and fibres) such as have been demonstrated in the brains of cases of family amaurotic idiocy in which during life the characteristic ophthalmoscopic changes were present. There is no *a priori* reason why the ganglion cells of the retina, the atrophy of which is supposed to give rise to the ophthalmoscopic changes in question, should be affected in every case of the disease. Indeed, there are several records suggesting that the retinal changes, although they led to the discovery of the disease, are not an altogether essential part of the pathological process. Unfortunately, necropsy records of such clinically "incomplete" cases are wanting, so that it has not yet been proved that the central nervous system in the "incomplete" cases shows changes exactly similar to those which have been proved to be present in "clinically" complete cases. Many of the clinical signs (spasticity of limbs, peculiarity in sucking, and difficulty in swallowing) in the present case, as in typical cases, are doubtless really due to a kind of chronic cerebral diplegia produced by the morbid process; and other signs can be explained by the cerebellum being affected also in the same way as the cerebrum.

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## ON PUERPERAL AMAUROSIS.

BY

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WITH A NOTE BY

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### Cases.

1.—*Albuminuria and headache in a primipara followed shortly after delivery by temporary blindness without ophthalmoscopic changes. No eclampsia. Recovery.*

Mabel T., an unmarried woman of 23 years, was admitted on November 23rd, 1909, to Queen Charlotte's Hospital, London, under the care of Dr. T. W. Eden. She was in the thirty-sixth week of pregnancy. A few hours after admission she was delivered, after a normal labour of 21 hours 20 minutes, of a female baby, weighing 4 lbs. 12½ ozs. The urine, tested

after admission to Hospital but before delivery, contained one-fourth albumin. The history was to the effect that for four or five years the girl had suffered from headaches after using her eyes, and that these had become much worse during the week immediately before admission, although during that time she had passed the ordinary amount of urine.

On November 25th—*i.e.*, two days after delivery—the patient stated that she had become blind in both eyes soon after the baby was born. Yesterday she was drowsy, suffered from severe frontal headache, and vomited twice in the evening (5 p.m. to 9 p.m.) and thrice in the night. Upon examination, the woman (who weighed 8 st. 12 ozs. before delivery) was found to be well nourished. The breasts were normal, and the uterus was well contracted. The patient groaned slightly with respiration. The tongue was dry (a mouth breather). Her mental condition was one of slight drowsiness. Arteries in neck pulsating. The walls of the radial arteries could be felt to be slightly thickened when pulsation in the vessels had been stopped by pressure of the finger. Kidneys not palpable. Slight œdema of legs. Urine, sp. gr. 1024, was acid, contained a thick cloud of albumin, and 2.9 per cent. of urea. When examined with the microscope, it was seen to include small numbers of white and of red corpuscles and epithelial *débris*. No tube-casts. The amount charted for the twenty-four hours was six ounces only; but the bowels had been opened four times. A slight systolic murmur (not organic) was heard over the pulmonary area. The patient's sight was equal, at the most, to recognizing the light of a flame passed before her eyes. The pupils reacted normally to light. The eyes, examined on this date by Dr. W. P. Herringham, Physician to the Hospital, showed no morbid changes. In Dr. Herringham's opinion, the woman was not suffering from uræmia. There had been no convulsions.

On the morning of the following day (November 26th) the patient said she felt much better; her headaches were improved, vomiting had ceased, and she could see light. When I examined the woman on the same day, I found the pupils widely (7mm.) dilated by the homatropine that had been applied to the eyes to facilitate examination of the fundus oculi. Sight, apparently similar in the two eyes, was equal to seeing large objects held near her eyes but not to recognizing their nature. The media were transparent, and the fundi showed no departure from normal. Slight myopic astigmatism in the right eye and mixed astigmatism in the left eye. The urine (of which 16 ozs. were charted, the bowels having been opened six times) contained over 2 per cent. of albumin, as estimated by Esbach's instrument.

On November 27th, although there was no vomiting, the patient still complained of headache. She had passed large quantities of urine (82 ozs. charted, despite four actions of the bowels). The urinalysis was as follows: reaction acid, sp. gr. 1011, urea 1.6 per cent., and a trace only of albumin. The urine contained a few leucocytes, and some cell *débris*, but no tube-casts.

On November 28th the patient could recognize fingers held up at a distance of six feet from her eyes. The headaches were both less frequent and less severe. She was stated to be passing much urine, a sample of which had a specific gravity of 1024, an acid reaction, and contained a trace of albumin and 3.3 per cent. of urea, together with a few leucocytes and yeast cells but no tube-casts.

On November 29th the patient stated that she could see quite clearly. Pupils reacted normally. No headaches. Urine (10 ozs. charted) slightly acid, sp. gr. 1028, trace of albumin, no sugar or deposit. When I examined the patient, I found that she could read ordinary newspaper type with her right and with the left eye the capital headings. The fundi presented no



changes. The pupils reacted normally. No obvious restriction of the visual fields (tested roughly). Her mental condition was brighter than when I saw her before, and might pass as normal.

November 30th.—38 ozs. of urine were charted. Its specific gravity was 1012, its reaction was acid, and it still contained a cloud of albumin, but no tube-casts. On December 2nd the amount of urea contained by the urine was 2·8 per cent. On December 6th the fluid still contained a trace of albumin. On December 8th, when the patient was discharged, she stated that she could see quite well. Her general condition was good, the urine was free from albumin, and the baby was flourishing.

During the patient's stay in hospital, which extended to fifteen days, her temperature rose to over 100° F. on two occasions only (November 25th and 26th), when it reached 100·4° F. and 100·2° F. respectively. The lochia became "pink" on the third day after labour, and "pale" on the seventh day.

The treatment included purgatives, hot-packs, and an exclusive milk diet. On the evening of November 25th antipyrin was administered to relieve headache, and on the next day a sedative mixture of sodium salicylate, with potassium iodide and the bromides of potassium, sodium, and ammonium was prescribed.

The patient was seen last on December 14th, 1909—*i.e.*, twenty-one days after delivery and six days after she left Hospital—when her condition was as under.—She looked and felt well. R.V. 6/18ii and No. 1 Jaeger at 23 c.m. L.V. 6/36 and No. 2 Jaeger (words) at 25 c.m. Pupils (dull morning) 3·5 mm. and active to light. The visual fields for a 5 mm. white square showed slight peripheral contraction, not more perhaps than the dull light of a December morning in London would account for. Refraction (estimated under a cycloplegic) :

$$\text{R.E.} = \frac{-0.5}{-0.5 \text{ 150}^\circ} = 6/6. \quad \text{L.E.} = \frac{+0.5}{-2.0 \text{ 15}^\circ} = 6/12i.$$

The patient complained of a difficulty in reading, especially with her left eye, and of "colours" when she closed her eyes.

*Summary of Case.*—A woman of 23 years lost her sight completely and suddenly soon after a normal labour, before which she had suffered from severe headaches and her urine was known to contain albumin. At the same time as the sight was lost, she was affected with frontal headaches, vomiting, and a semi-somnolent condition. The pupils retained their direct action to light, while the fundi showed no morbid changes. The urine, passed in good quantity, contained at the time 2·9 per cent. of urea, a considerable amount of albumin, some erythrocytes and leucocytes, but no tube-casts. Improvement in sight speedily set in, so that two days after delivery, light could be seen as such, and on the following day, large objects could be recognised. Five days after delivery, fingers could be recognised at a distance of six feet from the eye, and on the next day, ordinary newspaper type could be read with one eye. Twenty-one days after delivery, the sight of the right eye was normal, and that of the left one-half normal, errors of refraction being corrected by suitable glasses in each case.

2.—*Albuminuria, temporary blindness without ophthalmoscopic changes, and eclampsia in a primipara. Recovery.*

Winifred E., aged 20 years, was admitted in the first stage of labour to Queen Charlotte's Hospital, under Dr. A. F. Stabb, on January 13th, 1910. According to the history given, the woman had been passing very little urine and her legs had been swollen for about three months. Upon admission, the urine became almost solid when it was boiled. The forceps were

applied as soon as the cervix was fully dilated,  $4\frac{1}{4}$  hours after admission, and delivery was readily effected. The perineum, however, was slightly torn, but was sutured at once. The total duration of the labour was  $14\frac{1}{2}$  hours (1st stage, 14 hours; 2nd stage, 15 minutes; 3rd stage, 15 minutes). The baby was a female weighing 8 lbs.  $\frac{1}{4}$  oz., and measuring 21 inches. As soon as the patient came round from the chloroform that had been administered, she complained of headache and vomited once. It was then found that she was completely blind, although the pupils retained their normal appearance and preserved their normal reaction. After some six hours of blindness, she developed a typical eclamptic fit, which lasted for about one minute, and which was followed by a period of stupor continuing for some ten minutes. When she regained consciousness, the sight had returned. On the following day the woman was passing much water, and the œdema had markedly diminished. On January 17th—*i.e.*, four days after delivery—the patient expressed herself as feeling much better. The œdema was much less. The radial arteries were thickened. The patient could read, readily distinguish things about the ward, and although the pupils were dilated with atropine, could tell the time by a watch. The media were clear. Optic discs, retinal vessels, and fundi generally showed no ophthalmoscopic changes whatever.

There was no return of the eclampsia, and the further history of the patient, who left the Hospital well on January 31st, 1910, was uneventful.

Successive urinalyses were :

	Amount.	Sp. Gr.	Reaction.	Albumin.	Sugar.	Urea.	Deposit.
Jan. 13th ...	—	1.012	Acid	Much	—	—	Nil
Jan. 14th	78 ozs.	1.023	Acid	Cloud	Nil	2.2 %	A few granular casts and blood corpuscles, red and white
Jan. 15th ..	30 ozs.	1.010	—	Trace	—	—	A few hyaline casts and pus cells
Jan. 16th ...	50 ozs.	1.020	Acid	Trace	—	—	Nil
Jan. 18th ...	58 ozs.	1.012	Acid	Trace	—	—	Nil
Jan. 21st ...	—	1.012	Acid	Cloud	—	3.4 %	Urates
Jan. 26th	—	1.011	Acid	Nil	—	—	Phosphates

### Literature.

Literature contains scattered cases in which amaurosis or amblyopia, apparently not dependent upon uræmia, supervened during pregnancy, labour, or child-bed. Many were accompanied by eclampsia, and nearly all by albumin in the urine.

1. *Pregnancy*.—Setting aside such cases as those of Segar (1672), Albrecht (1690), Alberti (1732), and Beer (1792), the cause of which must now remain purely conjectural, instances of amaurosis during pregnancy have been described by Merriman, Lever, Kraus, Fourgeaud, Bomal, Ramsbotham, Bowman, Simpson, Williams, Angear, Hecker, Webster, Adler, Sourdille, Fauconnier, and Jardine.

Samuel Merriman<sup>1</sup> recorded a case of the sort in the year 1838. A woman, who had nearly completed the eighth month of her second pregnancy, became affected with pains in the head, and while cutting bread and butter for her

child, complained that she could not see the loaf. Her husband led her to a chair, and after she had sat awhile, she recovered her sight, so that the man left her to go to his work. But in the course of the morning she lost her sight again, and this was soon followed by labour, which resulted in the birth of a premature living child. Soon after the mother was put to bed, she desired to have the baby brought to her, as she wished to kiss it, although she could not see it, and almost immediately she developed a convulsive fit. After one or two other fits, she became comatose, but she ultimately got well.

Another early case of partial amaurosis with pregnancy was that of John C. W. Lever<sup>2</sup>, published in the year 1847. A 4 para, aged 31 years, was pregnant of her fifth child, and soon after "quickening," whilst engaged in some plain needle-work, she suddenly felt a peculiar sensation in the eyeballs, and found, on opening the lids, that she could merely see the outline of objects, their centres being totally dark. This state of things continued, with some slight remission, up to the full term of gestation, when she was delivered, after an easy labour, of a living child. The pupils, which were large, contracted, although sluggishly, to the stimulus of light. The urine was passed in full and sometimes large quantities, and was usually pale. Within a week of the confinement there was decided improvement, and at the end of five weeks she went into the country, where she spent about three months. On her return, she could see perfectly.

Another of Lever's cases was reported in 1854 by Fleetwood Churchill.<sup>3</sup> A lady, about thirty years of age, nearly eight months pregnant, suffered from total amaurosis in one eye, and from very imperfect sight in the other. She had had two fits and her urine contained albumin. Since the sight became more and more impaired, an operation for the induction of premature labour was resorted to. Several weeks after, the lady had recovered sight enough to play a game of cribbage.

A typical instance of ante-partum amaurosis was described in 1861 by L. G. Kraus<sup>3a</sup>, of Leipnik. The patient, a strong healthy woman of 45 years, was the mother of five children. Towards the end of her sixth pregnancy she complained of insignificant pain in the head. On November 5th she experienced violent pain in the right cheek and in the head. Then, feeling some pain in the lower part of the back, and thinking this was the beginning of labour, she asked for a candle to be lighted, it being about 3 o'clock a.m., but when that had been done, found, to her intense annoyance, that she could not see the light. A couple of hours later she was delivered of a healthy boy. The placenta was removed half an hour afterwards. There was no unusual loss of blood. When the woman was examined by Kraus, three hours after the onset of blindness and one hour after delivery, she was found to be restless, with red face, and strongly beating carotids and temporals. The radial pulse was 75 per minute, and hard. There were complaints of violent headache. The mother was indifferent to her child. Sight was abolished. The pupils, moderately dilated, were inactive to light. On November 7th the urine was examined and found to contain no albumin. Ophthalmoscopically, the choroid was reddish and over-filled with blood; the retina showed no changes; the vitreous humour was cloudy. On November 8th the urine was passed in great quantity. On November 9th Kraus was recognised by the patient upon entering the room where she lay. The pupils, although very dilated, reacted somewhat to light. Towards 2 o'clock that afternoon the sight again slowly failed, so that the woman was blind at nightfall. On the following day, however, vision was restored, while the pupils were of normal width and reacted well.

During pregnancy of Fourgeaud's patient, the face became cedematous, and

her sight so defective that it was difficult for her to distinguish persons a few feet from her and she was unable to read printed matter. The urine contained one-third albumin. The condition was regarded by Fourgeaud<sup>4</sup> as one of "puerperal uraemia." Six days later the albumin was considerably less, but, on the other hand, the amblyopia had gradually increased to such a degree that the woman was unable to recognize common objects at hand. She was delivered of a seventh months' dead fœtus. The following morning found her paraplegic, with involuntary discharge of feces and retention of urine. Her eyesight had now almost entirely gone. Nineteen days after the confinement the woman could move her left leg and distinguish persons in her chamber. Thirty-three days after this, she was able to read print.

A woman, aged 30 years, lost her sight suddenly and completely at 9 a.m. towards the end of the eighth month of her fifth pregnancy. When examined at 2 p.m. on the same day by Bomal<sup>5</sup>, the pupils were widely dilated and immobile, sight was abolished, and there were complaints of headache. There was no cedema. The woman was blooded, and thirty grammes had scarcely been taken from the vein when she exclaimed that she could see the light, and after thirty more grammes had been allowed to flow, that she could recognize the assistants. After one hundred grammes had been evacuated, the patient became comatose. In the sequel, sight was regained completely. Five weeks after this alarming experience, she gave birth to her fifth child.

Ramsbotham's case<sup>6</sup> was in a woman who began to lose the sight of both eyes in the last few months of her first pregnancy. When examined a fortnight before labour, she could only just point out the position of the window. The condition of the eyes became so much worse that "she could not distinguish the brightest sunshine." There was no headache, drowsiness, or loss of consciousness. Four days prior to labour, tingling and numbness were experienced in the right arm and leg. The labour was terminated by craniotomy. After the third day the patient began slowly to mend. In a month she could distinguish objects; in six weeks she could tell the time by a watch; and fifty-six days after the baby was born, her sight was completely restored.

The woman was known to have had one child afterwards without any return of the symptoms.

Sir William Bowman's case<sup>7</sup> appears to belong to this class. During pregnancy the patient rather suddenly lost her sight in great measure. There were no headaches. Oedema was present below one of the eyes. The urine was excessively loaded with albumin. The ophthalmoscopic appearances were normal. The lady was brought to bed of a still-born fetus thirty-three days after she consulted Bowman. The sight, however, only partially returned.

Sir James Y. Simpson<sup>8</sup> mentioned a couple of instances of ante-partum amaurosis:

1.—A woman towards the end of her second pregnancy developed a swollen face and intense headache, and her urine was found to be highly albuminous. Very shortly such a degree of blindness came on that she could not distinctly see objects and persons. She was bled freely. Labour pains began on the day of the blindness. Under chloroform, she was delivered of a premature child. The amaurosis in great measure disappeared after the bleeding, and the patient's recovery after delivery was speedy and perfect, the albuminuria passing off within a week subsequent to her confinement.

2.—Several weeks before the expected time the patient complained of very imperfect sight. The urine was highly albuminous. During the few succeeding weeks the amaurosis increased, and, in addition, symptoms of hemiplegia



came on. No convulsions. After delivery, this female recovered her sight, although she still suffered from slight hemiplegia.

The case reported by Henry W. Williams<sup>9</sup> may also have belonged to this group, although in most of the other cases with which I am acquainted the amaurosis was bilateral and equal. A 6-para, 37 years of age, suffered, as she had on former occasions, when between three and four months *enceinte*, from œdema of the face and lower limbs. Twelve days before confinement "everything appeared quite black to her right eye," while with both eyes open, she perceived "an appearance as of vapour over a hot stove." During the progress of labour, albumin was found in the urine. Within an hour of her delivery of a dead eight months' child, the woman could distinguish with her right eye the outline of a picture frame hanging opposite her bed. This improvement in sight increased day by day. The fundi were not examined. Williams himself reported the facts only from hear-say.

Several weeks before accouchement, Angear's<sup>10</sup> patient became so blind that she could not tell whether the lamps were lighted or not. The amaurosis had existed for twelve or fourteen hours before Angear saw the case. Labour was induced, and a living child was born. The blindness lasted for at least twenty-four hours, and then gradually passed away.

Hecker's<sup>11</sup> case was exceptional, inasmuch as the ante-partum loss of sight took the form of hemeralopia.\* A 6-para, aged 29 years, who was admitted unconscious, was delivered spontaneously after nine fits. When she regained her senses, she stated that for four weeks she had been unable to distinguish objects near to her at night (hemeralopia). The condition remained without change when she was discharged six days after labour.

In the eighth month Webster's<sup>11a</sup> patient had convulsions which lasted all one night, and in the morning she was found to be blind in both eyes, without ophthalmoscopic changes. Premature delivery was effected within twenty-four hours. The child lived, and the mother recovered.

Adler's<sup>12</sup> case.—After headache and vomiting, a primipara, aged 22 years, who was between the sixth and seventh month of pregnancy, was seized with tremors of the face and arms, and was admitted in that condition. After three such attacks of eclampsia, it was found that she was totally blind. The pupils were wide and motionless. The urine contained 10 per cent. of albumin (Esbach). After premature labour had been induced, albumin disappeared from the urine, and fingers could be recognized at a distance of  $\frac{1}{4}$  metre. Eight days after the labour, vision was equal to unity ( $V.=6/5$ ).

The main facts of the case reported by Gilbert Sourdille,<sup>13</sup> of Nantes, were as follows.—A woman, aged 34 years, in the fifth month of her first pregnancy, was seized with vertigo, obnubilation of sight, and great difficulty in recognizing near objects, a group of symptoms succeeded in the course of two or three days by sudden and complete loss of sight and eclampsia. The puerperal convulsions lasted for four days, and ceased only after the expulsion of a dead foetus. Blindness, however, remained absolute for several days, and then little by little improved somewhat. The urine included a notable amount of albumin. When the woman was examined by Sourdille a month after the commencement of the amblyopia, sight did not exceed one-twelfth normal, the pupils (unequal) reacted to light, and no ophthalmoscopic lesions could be found. In particular, the visual fields showed neither central scotoma nor marked peripheral contraction. Albumin had disappeared from the urine. Mental symptoms—as, for example, slowness of the memory

\* "Hemeralopia occurs with or without eclampsia, with or without acute Bright's disease, and generally disappears a few hours after delivery." *The Uremic Convulsions of Pregnancy, Parturition, and Childbed*. By Braun, translated by J. Matthews Duncan. Edinburgh and London, 1857, p. 19. At the same time the symptoms in Hecker's case may have been due to paralysis or paresis of accommodation.

and intelligence—were present. After upwards of seven weeks' treatment, the patient was discharged, her vision then being two-thirds normal, but the power of reading in comfort was not recovered until forty-three days later.

Fauconnier's<sup>14</sup> case concerned a primipara, aged 36 years, who sought admission to the Hôtel-Dieu, Paris, on account of sudden loss of sight which had taken place the previous afternoon. So intense was the amaurosis that she was unable to tell day from night. The urine contained a considerable amount of albumin. During artificial delivery eclampsia supervened, for the relief of which chloral was given *per rectum* and chloroform was administered. The baby was eventually delivered with forceps. When consciousness was regained, the woman stated that she perceived a certain sensation of light. Nothing abnormal could be found in the fundus oculi, examined with the ophthalmoscope at this stage. Some five hours after delivery the patient began to recognize objects, which looked as if wrapped in fog. On the next day sight was restored, but "very slight œdema of the disc, less marked on the left than on the right side" is said to have been present. The urine still contained albumin, although in much less quantity.

Jardine's<sup>15</sup> case was an instance of amblyopia rather than of amaurosis. The main facts are as follows.—A 1-para, aged 22 years, was admitted unconscious on January 20th. The urine, which was albuminous, contained granular and epithelial casts and red blood corpuscles. On January 23rd the woman was delivered naturally of a seven months' macerated fœtus. The placenta was apoplectic and showed small areas of fatty change. According to the history obtained, there had been swelling of the face and legs about the mid-term of pregnancy. This improved (without treatment) until some four weeks prior to admission, when the swelling returned. Three weeks before labour the eyelids became very puffy. There was abdominal pain. Her eyesight also was affected, there being often "a mist before the eyes." Three days before admission, there was headache and gastric pain and dimness of vision. On the day before admission the woman was found lying unconscious on the floor, and this was followed, after an interval of some hours, by severe fits. Dr. Ernest Thomson, who examined the eyes, reported that the right fundus was normal, but that in the left a thin hæmorrhage, about the size of a split pea, lay external to and above the macular region. When the woman was discharged on February 3rd, the albumin in the urine amounted to  $\frac{1}{4}$  per 1,000, Esbach.

2. *Labour*.—As regards amaurosis coming on during the actual progress of labour, the most remarkable case with which I am familiar was reported by Matteson<sup>16</sup> in a primipara, who, while in the throes of child-birth, became blind, totally and instantly. Although it was broad daylight at the moment, the patient could not appreciate the faintest glimmer of light. The pupils were moderately dilated. The labour terminated in half-an-hour. For two days the lady remained in total darkness. On the fourth day she could tell where the windows were, and on the next her sight was completely restored. There was no dropsy. The kidneys were acting freely. Albumin was not present in the urine, examined as soon as practicable after delivery.

Other cases have been published by Dewees, Ringland, Crosse, Greve, Decoin, Hood, and Ellett.

Dewees<sup>17</sup> narrates the case of a woman, aged 24 years, pregnant for the first time, who, while in labour, cried out with pain in her head, declared she could see no one in the room, and in a few minutes was seized with convulsions. A dead child was delivered by means of the forceps, and this was followed by the birth of a living child. The mother had no return of the fits, and she rapidly recovered her usual health. Her eyesight, however, did not return so

as to discern objects for several days, and her vision was very feeble for several weeks.

Ringland's<sup>18</sup> case was observed in the first pregnancy of a woman, 24 years of age. When in labour, the os uteri being then the size of half-a-crown, she complained of headache and of failing vision, and half-an-hour later sight had completely gone. The pupils were dilated and quite inactive to light. Seven days after delivery, the woman could read even small type at a considerable distance. When discharged a few days later, she was perfectly well and could see as clearly as she had ever done. There were no convulsions in this patient. The presence or absence of albumin in the urine was not mentioned.

A case of intra-partum amaurosis was published by John Green Crosse<sup>19</sup> in the year 1851. A woman, under 30 years of age, was in her first pregnancy. The labour began with a convulsion, the pupils were greatly dilated, and eyesight and sensibility were lost. The delivery was effected by forceps. Bleeding and blistering were freely practised. The convulsions ceased, and vision, which had been quite lost for several days, at length returned, and there was perfect recovery.

Greve's<sup>20</sup> patient, a primipara, aged 26 years, whose face and feet had become cedematous in the last week of pregnancy, complained of loss of sight when labour pains commenced. This was followed, first, by a feeling of anxiety and of sickness, and, then, by eclampsia. When examined by the author later in the day, the eyes were quite insensitive to the stimulus of light. The urine (withdrawn by catheter) was considerably albuminous. The delivery of a male infant by forceps was followed by further eclamptic attacks, of which, in all, it was computed that there were at least twenty-three. Three days after delivery the woman, then fully conscious for the first time, was found to have recovered her sight, although the urine still included a considerable amount of albumin. Puerperal mania then supervened, and lasted for some seven days. Ten days after labour the urine contained traces only of albumin.

A 7-para, aged 42 years, was seized with eclampsia at term when labour had just commenced. When examined by Decoin<sup>21</sup> shortly afterwards, the woman was semi-conscious, sight was completely lost, and the urine contained much albumin. A couple of days later, the patient could recognise persons and objects, and the urine, when examined, was found to include very little albumin. Three days after the onset of eclampsia and amaurosis, the patient was delivered of a female child. After labour her sight was good, and her urine free from albumin.

Jacomb Hood's<sup>22</sup> case was as follows.—A primipara of 19 years, was admitted to Queen Charlotte's Hospital, London, with a faint trace of albumin in the urine. Labour began twenty hours after reception, and when the patient had been in labour for twelve hours, she suddenly complained of blindness, and five minutes later had a convulsion, which lasted for about three minutes. The urine contained one-fifth albumin. The ophthalmoscope is stated to have shown "slight pallor of the disc, but no retinitis." Delivery, which was by forceps, was followed by nine more convulsions. The patient gradually recovered her sight, and when she left the Hospital on the fifteenth day, she was able to read small type.

E. C. Ellett<sup>23</sup>, of Memphis, was consulted by a woman, aged 35 years, the mother of three children. In her first two pregnancies she had suffered from toothache and neuritis of the branches of the brachial plexus. Relief followed delivery. The neuritis recurred in the earlier months of her third pregnancy. Two weeks before confinement her urine was of normal specific gravity and contained no albumin. When in labour she complained of



reduction of sight to the mere perception of light. For the first twenty-four hours after delivery there was complete suppression of urine. In the next twenty-four hours not more than one ounce of urine was passed, and this was highly albuminous. After this the secretion increased and the albumin lessened. Two weeks after the confinement Ellett found vision practically normal, fields normal, and fundi normal except for the fact that they were pale. The urine was normal as regards quantity and specific gravity, and included no albumin.

3. *Child-bed*.—To pass to examples of post-partum amaurosis more strictly comparable with my own, such cases have been reported after labour by Dewees, Cunier, Litzmann, Eastlake, Simpson, Weber, Reuling, Walliser, Hecker, Markuse, Eliasberg, Woods, and Jardine.\*

In Dewees's case<sup>17</sup>, a woman, aged 26 years, pregnant of her first child, was seized with terrible convulsions at the beginning of labour. The labour was completed by forceps, after which she remained insensible to everything for forty-eight hours. She then gradually recovered her senses. She was completely blind for two weeks, and then began to see imperfectly, but it was six weeks before she could discern objects distinctly.

Florent Cunier<sup>24</sup> narrates (with much circumstance) particulars of a lady who was struck with blindness after labour. Whilst she was in labour, convulsive movements of the face and lower limbs supervened. Immediately the baby was born, the convulsions became very violent, and on coming to herself an hour later, the patient exclaimed that she had lost her sight. Although the room was well-lighted, she believed that she had been plunged into the deepest darkness. When examined by Cunier four hours later, the pupils were widely dilated, and a candle passed before her eyes evoked no sensation of light. Forty-two hours after the onset of the blindness, the pupils were smaller and reacted to light, and the patient could tell the direction of the windows and distinguish the movements of Cunier's hand. Five and a half hours later, amid the general rejoicings of the family, it was found that the woman had completely recovered her sight. The pupils were then normal as regards both size and action.

An 8-para, 38 years of age, came under Litzmann's<sup>25</sup> care in the last month of pregnancy affected with oedema of the legs, hands, and face, dizziness, headache, and temporary obscurations of sight. Her obstetric history was of a most interesting nature.—Her first pregnancy terminated in the birth of a dead child twelve days after the onset of violent eclampsia. The second and third pregnancies were uneventful. The fourth, however, was complicated with eclampsia in the eighth month, and ended in the birth of a dead baby. The fifth pregnancy was normal, but amaurosis came on in the early part of the puerperium, and speedily disappeared after the application of leeches to the head. The sixth, complicated with eclampsia in the middle of the sixth month, resulted in the birth of a dead child. The seventh was normal; but soon after labour the woman complained of pain in the head, became amaurotic, and had two slight convulsions, after the cessation of which the power of sight was restored. The eighth ended in abortion at the third month. It is of importance to note that in the later period of almost all her pregnancies, Litzmann's patient suffered from headache, swollen face and hands, lessened excretion of urine, and temporary disturbances of vision.

\*Although Sharkey's case (*Dublin Hospital Gazette*, 1860, p. 85) was described as one of "hysterical amaurosis," yet it may possibly belong to the group now under discussion. On the fourth day after delivery, the patient, a primipara, aged 19 years, was seized with a series of most alarming fits, accompanied by screaming, fainting, and delirium, with convulsive movements. She went perfectly blind. Next day the blindness continued, and the pupils were inactive and in a medium state of dilatation. Thirteen days after the onset of the symptoms the patient had recovered.



Eastlake's<sup>26</sup> case is almost classical. His patient, a woman of 34 years, who had borne nine children at term, had always enjoyed good health. On the second or third day after the birth of her second child and all subsequent children, she suddenly became more or less unconscious and totally blind in both eyes. When this female was seen by Eastlake, three days after her last confinement, she could not tell light from dark. There was no albuminuria. The eyes were examined by Zachariah Laurence, who found the fundi normal with the exception of a somewhat contracted state of the retinal arteries. Under tonic treatment the ocular condition appears to have improved considerably.\*

The main facts of the case of recurrent post-partum amaurosis recorded by Sir James Y. Simpson<sup>8</sup> are as follows :

A woman, *ætat* 36 years, the mother of six children, became totally blind in the course of a single night 48 hours after the birth of her fifth baby. The blindness passed away completely in the course of a few days. Her urine at the time was highly albuminous. During the second week following the birth of her sixth baby the patient again became blind, although the blindness did not entirely disappear as in the former attack. The urine still contained albumin.

Weber's<sup>27</sup> cases, four in number, were briefly as under :

1. A woman, aged 18 years, was seized at the beginning of labour with eclampsia. After six eclamptic attacks she was delivered with forceps. On full recovery from the chloroform which had been given, the patient found that she was entirely blind : there was not even perception of light. The pupils were wide and motionless. Urine, passed in small amount, contained much albumin. After three days light was recognized, and after five, vision was quite restored. No albumin was found when the urine was examined on the sixth day after labour.

Other pregnancies, it is interesting to note, were followed by no untoward consequences.

2. This case occurred in a woman, aged 42 years, the mother of thirteen children. A convulsion followed expulsion of the "waters," and this was succeeded by two other fits of less intensity. After the patient had recovered consciousness, the head was painful and there were flashes of light before the eyes, and ten hours later she became completely blind. On the fifth day the patient could tell light from dark, and on the next day sight was fully restored. Even after several weeks the urine contained much albumin.

Two subsequent labours were free from either eclampsia or amaurosis.

3. An obese woman of 40 years, who had had six children without accident, developed headache and sparks and flashes before her eyes after the birth of her seventh child. Six hours later, amblyopia, and four hours after that, amaurosis of so complete a description that she possessed the faintest perception only of a bright light. The blindness had improved in a fortnight, and had disappeared at the end of a month. Albumin was never found in the urine of this patient.

A second confinement, which occurred eighteen months later, was followed by no unusual symptoms.

4. The last patient was a 3-para, aged 30 years. Seven hours after labour complete blindness was ushered in by pain in the forehead and temples. The

\*John C. W. Lever (*Guy's Hospital Reports*, Vol. V., 1847, p. 18) alludes to a case where amaurosis took place in two successive pregnancies. Again, Siehel (*Annales d'Oculistique*, T. XIX, 1848, p. 140) mentions the case of a female who developed amaurosis in six successive pregnancies, sometimes towards the end of gestation and at others during accouchement. Despite the complete blindness, cure resulted on each occasion. Precise details, however, are wanting of these interesting cases.

urine was both scanty and albuminous. A few hours after the amaurosis the woman had a severe eclamptic fit, which was followed by two others. Morphia and chloroform were given, and when full consciousness was regained, objects could be clearly seen by the patient.

It would seem that the case reported by George Reuling<sup>28</sup> belongs to this class. A woman, aged 30 years and weighing over two hundred pounds, was seized about a week after parturition with violent pain in the eyes, followed two weeks later by a failure of vision culminating (after twelve days) in inability to see even the motion of the hand. In six days there was recovery of fair sight, followed by complete cure. The ophthalmoscopic appearances were almost negative. There was apparently no albumin in the urine. The condition was ascribed by the author to "retro-bulbar neuritis."

Walliser<sup>29</sup> reported the case of a primipara, aged 18 years, who was affected with post-partum amaurosis. Labour began at 7 a.m., the waters escaped at 10 a.m., and the baby was born at 11 a.m. At the moment when the occiput disengaged itself, the woman was seized with convulsions, and the pains, strong until then, ceased. The eclampsia came to an end shortly after the placenta had been removed towards mid-day. At this moment the patient requested that the lamp might be lighted, as she could not see her baby, and it was with difficulty that she could be persuaded that it was full noon. When examined by Walliser twenty hours after accouchment, the pupils were dilated and insensitive to light. The urine contained a little albumin. On the following day the pupils reacted slightly to the light of a candle, and the patient could tell light from dark. Next day fingers could be counted. Improvement continued, and a fortnight after labour, the patient was able to read a newspaper with ease.

Under the name of "Amaurosis uræmica" Paul Markuse<sup>30</sup> reported a case of post-partum amaurosis, observed in a woman of 42 years, who had given birth to nine children without accident during her eighteen years of married life, and who had always enjoyed good health. But about five weeks before delivery her urine had become dark and scanty and her ankles swollen. Whilst in labour, headache made its appearance, and soon increased to an almost unbearable degree. Soon after the baby was born, vomiting came on, and this had lasted for scarcely a quarter of an hour when the patient suddenly went blind in both eyes. Markuse, who examined the patient some eighteen hours after labour, found the woman exhausted but conscious, free from convulsions, and continually calling out "My head!", "My head!" The pulse was about 100 per minute, hard, and strikingly tense. The urine, of which not quite half a litre had been passed in the last twenty-four hours, contained 1 per cent. of albumin (Esbach). The pupils were equal and active to light. Blindness was complete. The eyes were not examined with the ophthalmoscope. Next day the urine (1.25 litres in the twenty-four hours) contained only 1 per 1,000 albumin; and a candle flame held close to the eyes was noticed. Two days later the woman could recognize those standing about her. On the following day large letters could be read, and there was no contraction of the field of vision. Two days after that, the woman, who could read small print, said that she could see almost as well as she ever did. She was discharged well twenty-one days after her confinement, there then being a trace of albumin in the urine. It is important to note that eclampsia was not present at any time in the history of this case.

J. Eliasberg<sup>31</sup>, of Salonica, placed on record the following instance of post-partum amaurosis.—A woman, aged 27 years, had borne four children without accident. During the last month of her pregnancy her legs became œdematous. Labour occurred (it was said, without the woman's cognizance)

towards mid-day on January 26th. When examined half an hour later, there was profound depression, atrocious pain in the head, and complete amaurosis. Three hours after labour, when Eliasberg saw the patient, quantitative perception of light only was present, although the pupillary reactions were normal and the fundi were free from morbid changes. The amaurosis, which was regarded as "uraemic" by the author, disappeared at the end of two days. The urine was diminished in amount; there was no eclampsia.

Hecker<sup>11</sup> has the following case.—A primipara, aged 23 years, who had very little albumin in the urine, and who presented no œdema, was delivered of a living boy by forceps after five eclamptic attacks. Total blindness then supervened, without any change being visible in the retinae. On the fourth day after delivery fingers could be recognized, and in ten days the patient was discharged with normal sight.

Hiram Woods<sup>32</sup> mentions a case of post-eclamptic amaurosis.—A woman, 22 years of age, developed seven or eight convulsions towards the end of her first confinement. After the second of these fits her sight disappeared. When examined by Woods a few hours later, there was not even perception of light, although the fundus of each eye was normal. This female remained blind for ten days, and then recovered. Hemiplegia, however, persisted for three weeks.

A couple of succeeding pregnancies were followed by no trouble.

Two well-recorded cases by Robert Jardine<sup>15</sup> are of considerable moment:—

1. A woman of 40 years was delivered of her fourteenth baby on January 9th. For some days prior to delivery her legs had been swollen. Two hours and a-half after labour she complained of severe frontal headache, and of being only just able to discern light. The dilated pupils were equal, and reacted readily to light. A slight internal squint of the left eye was thought to be present. The urine contained albumin (about  $3\frac{1}{2}$  per thousand), copious blood, and granular and blood casts. The face was puffy, and there was moderate œdema of the legs. At night there was a severe fit, which lasted for about four minutes. On January 12th the patient could see white objects before the eyes and tell that there were people in the room, and an ophthalmoscopic examination (carried out by Dr. Ernest Thomson) revealed no morbid changes. On January 14th sight was quite clear. On January 20th the woman was well, but the urine still contained a trace of albumin ( $\frac{1}{4}$  per thousand.)

2. A 5-para, aged 38 years, developed three fits within  $6\frac{1}{2}$  hours after delivery of a premature dead female child. Her urine was loaded with albumin. There were severe headaches. Sight was reduced to perception of light. The amaurosis disappeared in a day or so, a few hours after the fits had also ceased. The albumin had almost gone in one week, had gone in four weeks, although a trace was found when the urine was again tested two months later.

The same author<sup>33</sup> has elsewhere reported a third example of post-partum amaurosis.—The patient, aged 27 years, was within a couple of weeks of her fifth confinement. There was a history of recent swelling of the extremities and of headaches and four fits had occurred. She was admitted comatose. The urine contained blood and albumin (8 per 1,000 Esbach). The os tinae was mechanically dilated, and the baby extracted by version. Next day, the woman being then conscious, she said she could not see, although the fundus oculi showed no changes to account for the blindness. Twelve days after delivery, she had fully recovered, and her urine was free from albumin.

In extremely rare cases it would seem that puerperal amblyopia may appear under the guise of a temporary hemianopsia. A case of this kind was

reported by F. Lehmann<sup>34</sup>.—A woman, aged 27 years, had suffered in the last month of her first pregnancy from headache and œdema of the legs. She was brought to bed of a healthy boy on June 4th. The labour was attended by little loss of blood. Twelve hours later, the patient found that she could not see the left half of her husband's face, the right half remaining visible. On June 5th she could only tell light from dark; the pupillary reactions were normal; the fundi showed no ophthalmoscopic changes. Pulse 84, very tense. Headache. On June 6th the urine was discovered to include a trace of albumin. The woman could recognize everything distinctly, but, as she remarked, "*alle haben keine Nasen*." Upon examination, it was found that she could count fingers peripherally, and could read letters. But there was an absolute central scotoma in each field, which at a distance of  $1\frac{1}{2}$  feet from the face, had the dimensions of a five mark piece. The pupils and fundi were normal. On June 8th, sight was completely restored. The urine, however, still contained a trace of albumin. On June 16th, when the woman was discharged, the eyes were normal, and the urine was free from albumin. At no time were puerperal convulsions present in this female.

Another case of this kind has been reported by Ludwig Knapp.<sup>35</sup> A primipara, aged 27 years, was admitted in deep coma, and after dilatation of the cervix by Bossi's instrument, she was delivered by version of an asphyxiated infant. When she became conscious, she complained of disturbance of vision, and upon examination by Czermak twenty-four hours after delivery, it was found that sight was extremely defective as regards the right half of the visual fields. Beyond some pallor of the optic discs, the fundi were normal. The ocular symptoms disappeared within the next few days.

It is, I suppose, possible that the peculiar condition present in Knapp's case had resulted from the partial recovery of an amaurosis that had earlier been general; much as in Lehmann's case, where it was evidently the forerunner of an almost complete amaurosis.

Hiram Woods has reported three cases of permanent hemianopsia after delivery, but the first alone carries any conviction to my mind. The cases are as under:—

1. A woman of 33 years consulted Woods<sup>32 36</sup> on account of a left hemianopsia, complete except for a small portion in the superior quadrant, which had followed about the fifth day after the birth of her first child, eighteen months previously. Instrumental delivery had been effected three hours after an eclamptic convulsion, lasting for not longer than five minutes. For four days after the confinement there was persistence of retinal impressions. During the night headache was atrocious. Towards morning she fell asleep and on awakening (to quote the patient's graphic words) "suddenly, as if some one on my left hand had pulled down a blind, my sight on the left side went out." Traces of albumin had been found in the urine in the sixth month and persisted until the end of pregnancy. The urine, moreover, was diminished in amount, while the out-put of urea varied from 7·5 to 10·5 grammes *per diem*.

2. A woman, 37 years of age, during the fourth month of her pregnancy was affected with headache and diminished excretion of the urine, which contained no albumin and ten grammes only of urea. Under a milk diet the amount of urine increased to 67 ounces and the urea rose to sixteen grammes, and all symptoms disappeared. On January 1st, after a normal labour, the woman was delivered of a healthy baby. On the third day there were flashes of light in the right eye, and next day there was intense pain, particularly on the right side of the head. On January 13th there was complete hemi-anæsthesia of the right side. On the thirteenth day of the puerperium the urine was



found to include a trace of albumin. When the woman was examined by Woods in May, the fields showed hemianopic defects, and were in much the same state when she was seen five years later.

The grouping of symptoms in the foregoing case is suggestive of a functional origin. That hemianopsia may occur as the result of hysteria is shown by cases reported by myself as well as by several other writers (*THE OPHTHALMOSCOPE*, May, 1909).

3. This patient first noticed visual defect on the right side when up for the first time after her sixth confinement. There was right hemianopsia. The history suggested syphilis, but the notes of the case are so scanty as to be inconclusive.

In a few of the cases, among which may be mentioned those of John C. W. Lever and F. Lehmann, there was evidence of the existence of a definite central scotoma in the field of vision. The scotoma can be best explained on the view that a retro-ocular neuritis existed, and had attacked the papillo-macular bundle of nerve-fibres. We know that many such cases are the result of an intoxication with various chemical agents, such as tobacco, alcohol, and carbon disulphide. There is no reason whatever to suppose that an unidentified toxin, the product of pregnancy, circulating in the mother's system, may not under some circumstances act in a way similar to the chemical poisons enumerated above. Moreover, the analogy with the central scotoma sometimes observed in cases of diabetes or of ptomaine poisoning is very close. But further observations are needed in this direction.

### Comments.

Although for convenience of description the cases abstracted above have been arranged in three groups, yet it is probable that their ætiology is essentially similar whether they occur before, during, or after labour. Certain points stand out prominently:—

1. The existence in most of the cases of convulsions—so-called “puerperal eclampsia.”
2. The presence in the urine, which is usually excreted in scanty amount, of albumin, blood, and various kinds of tube-casts.
3. The existence of headache.
4. The co-existence of œdema of the eyelids, face, and elsewhere.

That the defect in sight may form a premonitory sign of puerperal eclampsia is shown by the cases of Jardine, Greve, Hood, Weber, and my own (No. 2). This method of onset has been recognized by obstetricians for many years. “When women in labour frequently complain of blindness, they are in danger of falling into convulsions,” wrote Thomas Denman<sup>37</sup> a hundred years ago and more. “Indistinct vision or blindness” was enumerated among the premonitory symptoms of puerperal convulsions by Joseph Hopkins,<sup>38</sup> who wrote as long ago as 1820. Fordyce Barker<sup>40</sup> remarked that if headache was the most frequent precursory symptom of eclampsia, impaired vision was the most significant. A very remarkable instance of puerperal eclampsia, preceded for twenty-four hours by total blindness, has been reported by De Witt.<sup>39</sup> To turn to more modern writers, among the prodromal symptoms of eclampsia enumerated in the *American Text-Book of Obstetrics*<sup>41</sup> we find “flashes of fire before the eyes or progressive loss of sight.” Again, from Henry Jellett's *Short Practice of Midwifery* we learn that “complete or partial, temporary or persistent, loss of vision” is one of the more immediate prodromal symptoms of eclampsia.

But it is more common for the amblyopia or amaurosis to supervene after one or more “fits” have taken place. This contingency also is admitted by writers

upon the subject. Denman,<sup>37</sup> writing more than a century ago, gave particulars of a lady who in the latter months of her pregnancy had many attacks of violent pain in the head. When she fell into labour, she became blind and had a convulsion. The child had been dead for about a fortnight. The blindness remained in some measure for several days after her delivery (*loco citato*, page 371). Wm. P. Dewees, an American physician who published *A Compendious System of Midwifery* in 1825, reported eight cases of puerperal convulsions, of which no fewer than five showed more or less affection of sight (*loco citato*, p. 502). Jellett (*loco citato*, p. 325) states that "total or partial loss of vision or of memory ensues, and if the patient recovers, may persist for a considerable period after the fits have ceased." Again, Robert Jardine (*loco citato*<sup>15</sup>, p. 391) has twice seen patients suffering from puerperal eclampsia absolutely blind during the labour, although both recovered their sight after delivery.

Finally, eclampsia need never occur, as in my own patient (No. 1) and in some of the other cases mentioned in the present communication.

The explanation of puerperal eclampsia is still *sub judice*. By most authorities, however, it is nowadays regarded as something altogether distinct from uræmia. As pointed out by J. Clifton Edgar<sup>42</sup>, cases of ordinary chronic interstitial nephritis, the one affection of the kidney almost certain, given time, to produce uræmia, are little influenced by pregnancy. As he remarks, "This fact has doubtless done more than any other to convince obstetricians that some radical differences underlie uræmia and the toxæmia of pregnancy." The best modern opinion tends to look upon eclampsia as the result of a poisoning of the woman's system with the products of her own metabolism and, possibly, with those of the fœtus. If the emunctories are working well these dangerous products are safely removed. On the other hand, when the liver, kidneys, spleen, intestines, or skin fail, convulsions (eclampsia) and other signs of toxæmia, of which I suggest amaurosis is not the least important, are only too likely to ensue. Under the circumstances named disturbances of excretion, as evidenced by headache, œdema, albuminuria, and decrease in the amount of urine, are common.

It is reasonable to suppose that a toxæmia at any period during pregnancy, labour, or child-bed may culminate in : (1) eclampsia, (2) amaurosis,\* or (3) eclampsia and amaurosis. On this view, amaurosis and eclampsia are co-ordinate phenomena, the result of a toxæmia common to both, a remark that applies equally to the albuminuria so frequently present. All the cases included in the present communication can be readily explained in this way.

The fact is probably not without significance that amaurosis of a comparable character has been observed in association with severe vomiting of pregnancy—*hyperemesis gravidarum*, as it is sometimes termed. A case of this kind was reported by M. Landsberg,<sup>43</sup> of Berlin, in 1878. The patient, a woman, aged 31 years, had suffered from much sickness during the first half of her first pregnancy. After an intermission, she was seized with gastritis, followed by jaundice and recurrence of the vomiting. After three days, when the emesis was beginning to improve, she remarked a flickering before both eyes and a rapid diminution in the power of sight, and when seen on the next day by the author, she could only tell light from darkness, although the pupils showed no changes and the fundi were normal. The urine did not contain albumin; there were no headaches. On the same evening, the woman could recognise

\*A similar view has been taken by J. Whitridge Williams<sup>45</sup>, according to whom the toxæmia of pregnancy "may be accompanied by disturbances of vision, which sometimes amount to total blindness" (p. 457)

the position of a flame at a distance of eight feet, and on the following day vision was entirely regained. Four days after the onset of the amaurosis, the patient could read fluently Snellen 15. The vomiting of pregnancy (at all events, its severer forms) is now regarded by some of the most acute observers as due to auto-intoxication, since in fatal cases changes have been discovered in the liver and kidneys which closely resemble those found in cases of fatal eclampsia. On this view, the amaurosis is probably due to the same cause, namely, a toxæmia. It falls into line, therefore, with the cases described in other parts of the communication.

That the co-existence of œdema of the face and elsewhere, together with albumin in the urine and headache, has led to many cases of toxic blindness being classed with uræmic amaurosis is certain. In this connection the cases of Kraus, Matteson, Eastlake, and Weber (third case), where albumin was not found in the urine, although looked for, are of great importance.\* In some of the other cases albumin, although present, was in small amount, and seeing that such a condition is present in 50 per cent. of all pregnant women (H. M. Little), much stress cannot be laid upon the observation as indicating organic kidney mischief. Another significant fact is that several of the women who were affected with amaurosis eventually recovered good health and had other children, which is scarcely likely to have happened if they had ever really suffered from uræmia. Again, the occurrence of eclampsia in some pregnancies and of amaurosis in others is an argument against the dependence of the one condition upon the other, and in favour of the dependence of both upon some common factor. This is seen to perfection in the striking case by Litzmann, quoted on page 177. A case reported in 1836 by J. T. Ingleby<sup>44</sup> may serve to emphasise this important point. In her first pregnancy Ingleby's patient developed puerperal convulsions, followed by stupor, continued for about twenty-four hours. In a subsequent pregnancy she was attacked with complete amaurosis, which lasted during the whole period of her labour. Vision was gradually restored.

Indeed, with regard to this point I find myself in accord with Hiram Woods,<sup>32</sup> of Baltimore, who has stated that in view of "recent pathological investigations in the obstetrical field . . . there is doubt as to whether the term uræmic should be applied to the blindness occurring in connection with puerperal eclampsia." Fauconnier<sup>44</sup>, also, is of opinion that the amaurosis, as well as the albuminuria of pregnancy, is to be regarded as a manifestation of gravidic hepato-toxæmia.† He further believes that the so-called eclamptic or uræmic blindness is an outcome of the same species of auto-intoxication.

That opens up another point, namely, the propriety of speaking of such cases as if they were the result of puerperal eclampsia. That the amaurosis may be a premonitory sign of eclampsia, as in my second case, renders it much more probable that the two conditions are dependent upon a common cause. Again, amaurosis, precisely similar to that met with during or after eclampsia, may be observed, although rarely, without eclampsia. Several such cases are mentioned in this communication by Weber, Reuling, Markuse,

\* Although the existence of albumin was not affirmed in many other cases, it was not expressly denied (Ramsbotham, Hecker, Litzmann, Reuling, Woods, Eliasberg, Crosse, Dewees, Cunier, Angear, Ringland, Merriman, Lever, Bomal, and Webster). It is therefore open to question whether the urine was or was not examined. For this reason such cases have been excluded from the foregoing list.

† In view of the characteristic *post-mortem* change found in the liver of pregnant women suffering from toxæmia, it is believed, especially in France, that certain toxins ordinarily rendered powerless for harm by the metabolism of the liver, gain entrance to the blood-stream, and thus cause the symptoms. The condition is spoken of as "hepato-toxæmia."

Eliasberg, Lehmann, Ellett, Sir James Y. Simpson, Williams, Angear, Matteson, Ringlead, Lever, Bomal, and Ramsbotham. The first of my own cases is quite conclusive as regards the point.

But when all is said and done it must be admitted, I think, that the distinction between the two conditions—uræmic and toxic amaurosis—in a given case may be difficult or even impossible. That such a distinction exists can nevertheless scarcely be denied by everybody who has studied the facts. Even the amount of urea excreted by the kidneys cannot be depended on for differentiation, since Williams (*loc. citato*, p. 457) states that in the toxæmia of pregnancy there is a reduced out-put of urea, and, indeed, in such cases the sole urinary abnormality may be a marked diminution in the quantity of that substance.

### Conclusions.

(1) That a form of amaurosis or amblyopia, not accompanied by ophthalmoscopic signs, or, at least, by none adequate to account for the condition, may supervene during pregnancy, parturition, or the puerperium.

(2) That rarely it may assume the form of an hemianopic defect or of a central scotoma in the fields of vision, and still more rarely of hemeralopia.

(3) That it is often associated with such signs and symptoms of toxæmia as headache, cedema, eclampsia, and scanty urine, containing albumin, casts, and blood.

(4) That it appears to form one of the rarer manifestations of toxæmic poisoning.

(5) That it is not proved to be dependent upon uræmia, although it has usually been confused with so-called "uræmic amaurosis."

(6) That it recovers, as a rule, completely within a few hours or days.

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### Note by Dr. W. P. Herringham.

These cases of amblyopia or amaurosis coming on after pregnancy are uncommon. They are generally accompanied by fits, and almost, but not quite, always by albuminuria. They are invariably transient. When amblyopia does not pass off in a few days it is due to something else.

The pathology of the amblyopia is undoubtedly the same as that of the eclampsia which it accompanies. This latter is still in dispute. Some maintain that it is due to uræmia. As we do not know what uræmia is, this does not greatly clear matters. But that chronic or severe disease of the kidney is always present, we cannot, I think, in the presence of many histories of subsequent good health, believe. In some cases chronic renal disease exists. If it be said that in the others the condition is one of acute or subacute nephritis, then I can only say that I have never seen transient amblyopia, without any change in the fundus, in acute or subacute cases except in connection with pregnancy.

There are, as is well-known, other theories of eclampsia. One of them, that of placental toxæmia, as put forward by Liepmann, ascribes the renal affection, whether transient or lasting, to the same toxæmia as causes the convulsions. It would be foolish in me to pretend to an opinion on a matter which gynæcologists still dispute. The interest to me is rather this.—It seems certain, on any shewing, that pregnancy and confinement have a peculiar effect upon the kidneys. It sometimes, at any rate, shows itself in severe albuminuria when events prove that it has not produced lasting structural disease in the renal tissue. The same conditions also produce upon the nervous centres effects much resembling those produced by organic renal disease. It seems not impossible that by careful studies of such cases as these of Mr. Stephenson, we may be able to throw light on what must be a similar condition, that usually called uræmia.

The following three cases are more or less analogous to the ones reported by Mr. Stephenson :

*CASE 1.—Chronic nephritis : toxic amblyopia : slight peripheral choroiditis : recovery.*

Agnes, J——, 27 years. Admitted to Queen Charlotte's Hospital on January 10th, 1902, and discharged January 29th, 1902, under the care of Dr. W. R. Pollock. Primipara. The urine was almost solid with albumin. It contained granular casts and epithelium. The urea was not estimated. Marked cedema of legs. No uremia. Heart enlarged, and arteries thickened.

*History.*—No history of scarlet fever or of rheumatism. None of nephritis. Swelling of legs began about December 16th. Patient has been passing much less urine than usual. The lower eyelids have been swollen for a week. No epistaxis.

After the woman had been in labour for upwards of thirteen hours, forceps were applied on account of her exhausted condition. By these means a baby was delivered, and this was followed by the expulsion of a second baby, a breech presentation. Both infants were alive.

On January 12th, amblyopia was noticed on awaking, and was worse in the left than in the right eye. On January 14th the sight was better. On January 16th the following notes were made : patient pale and rather thin. No cardiac murmur. Apex beat just internal to nipple line. The pulse regular. Artery slightly thickened ; pulse not of high tension. No cedema (the cedema of the legs disappeared on the day following labour). The urine, now passed in full natural amount, contains about 0.4 per cent. albumin. When examined with the ophthalmoscope, the optic discs were seen to be clear and pale. There was no retinitis. The retinal vessels for the most part were quite natural, but one in the upper-outer quadrant of the left fundus wiry and not transparent. January 21st.—No cedema. Lips red. Heart and pulse as before. The urine, which was natural in amount, was acid, turbid, and of amber colour. It contained, in addition to casts, nearly 0.2 per cent of albumin. Sight was much improved. With plus 1.D. sph. can read a notice across the ward nearly as well as I with the right though not with the left eye ; whereas when the dulness of sight began, the patient could not distinguish the features of anybody standing near. In the right eye there were a few small patches of yellowish mottling about the yellow spot, and less in the left eye. Mr. Stephenson, who examined the case, noted, in addition, slight peripheral choroiditis, but could not ascribe the amblyopia to the fundus changes.

The patient was discharged on January 29th, 1902. She was then in good health, and her babies were thriving.

*CASE 2.—Eclampsia and amblyopia.*

Emily, S——, aged 20 years, was an inmate of Martha Ward at St. Bartholomew's Hospital, London, when I was Registrar. The notes of the case unfortunately are very imperfect, but the woman suffered from eclampsia and amblyopia. The urine averaged 40 ounces *per diem*. Its specific gravity was 1021, and it contained a trace only of albumin. As 400 grains of urea were excreted daily, the case did not look like one of chronic nephritis.

*CASE 3.—Puerperal eclampsia and temporary amaurosis.*

Ann F——, 24 years. Admitted to Faith Ward in St. Bartholomew's Hospital, London, on November 17th, when I was Registrar to the Hospital. She had been delivered of her first baby, a boy, on October 14th. She had previously enjoyed good health. The labour was uncomplicated. The woman remained well until November 3rd, when her face began to swell. On November 10th, she went out on a cold day, an exposure which was followed by swelling all over. On November 13th the sight began to fail. On November 17th she was unable to see at all. At 2 o'clock p.m. on that day she was seized with epileptic convulsions, of which she had a couple before she was admitted to the Hospital. There were several after. *On admission.*—Heart-sounds clear. High tension pulse. Urine scanty ; much albumin ; no casts. November 21st. Pulse 84 per minute. Urine contains a trace of albumin only. November 22nd.—Pulse 78. Urine, sp. gr. 1014, contains no albumin. November 23rd.—Urine cloudy, and sp. gr. 1015. An ophthalmoscopic examination, made on this date, showed that the fundus was entirely normal. Sight appeared to have returned to its natural condition on this date, the dimness having lasted since the 13th instant. November 24th.—Pulse 70 per minute. Urine, sp. gr. 1014, no albumin.

Speaking for myself, I have never seen this kind of amaurosis in ordinary nephritis. If it occurred, it would surely be met with in the scarlatinal cases. I wrote, therefore, to Dr. F. Foord Caiger, Medical Superintendent of the South-Western Fever Hospital of the Metropolitan Asylums Board, thinking that his special experience might possibly supply what mine lacked. The following was his reply :—"I have never, to my knowledge, met with an instance of amblyopia or blindness in scarlatinal nephritis, either in the acute or the early stage of the chronic affection. . . . After the lapse of a few weeks, three to six, the great majority get quite well, as far as clinical evidence goes. And in the few one keeps as long as 12 to 16 weeks or more . . . on account of the persistence of albumin, even assuming

they retain a trace at the time of their discharge, I have never seen any visual trouble supervene during their stay in hospital. In fact, I feel pretty certain it does not occur in children, at any rate. I know of no observations bearing on the subject, either here or elsewhere."

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## CLINICAL MEMORANDUM.

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### A NEW INSTRUMENT (SCLEROSTOME) FOR PRODUCING A SUB-CONJUNCTIVAL FISTULA.

F. H. VERHOEFF, A.M., M.D.,

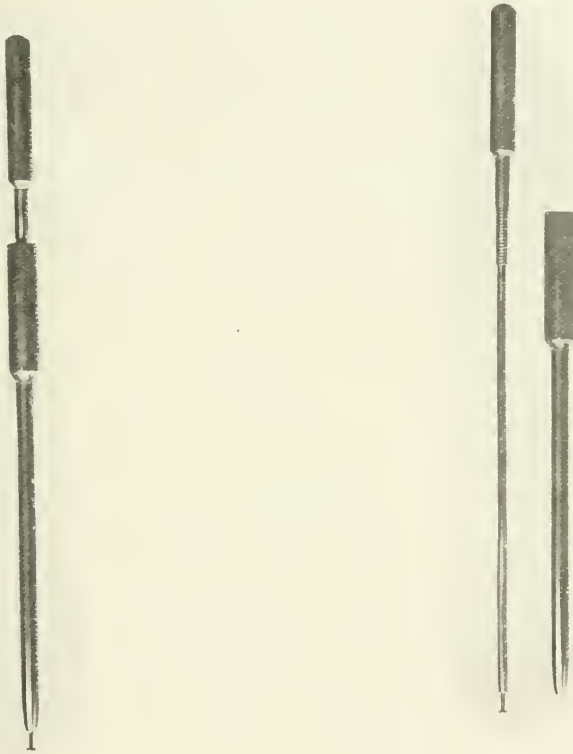
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WITHIN the past few years renewed attention has been called to the possibility of establishing artificial drainage from the anterior chamber to relieve glaucomatous tension. The earlier attempts in this direction were to obtain a so-called filtering cicatrix. In regard to this I must agree with Henderson that a cicatrix which will allow fluid to pass in adequate quantity is an impossibility. These earlier attempts, however, it seems to me, must be sharply distinguished from the more recent procedures of Lagrange and Holth, where endeavour is made to establish a sub-conjunctival fistula, a fact which Henderson apparently has overlooked. That it is possible to establish permanent drainage by this means is certain. Such a fistula is occasionally produced by accidental trauma. I recall one case especially in which a fistula, ideal for glaucoma, resulted from the penetration of a nail at the limbus.

It seems self-evident that to produce successfully a sub-conjunctival fistula by operation, there must be a minimum of trauma to the tissues. This fact, I think, has not been sufficiently recognized. If the tissues are so severely injured that inflammatory reaction is set up, an ordinary impervious scar will inevitably result. Another important desideratum is that the fistula should be circular in cross-section. If it is not, there will be more or less tendency for the walls to come in contact and finally to unite. This tendency is distinctly noticeable after the operation of Lagrange, and I presume that it is also present after that of Holth. In these two operations, also, the tissues are considerably traumatized. The question of the size of the opening is, no doubt, also important. If too large it will encroach on the ciliary body, in which case the reaction set up will tend to close it, and it will also favor prolapse of vitreous humour. If too large, also, the re-establishment of the anterior chamber will be too long delayed, which will in itself conduce to the closure of the opening.

In THE OPHTHALMOSCOPE for December, 1909, Major R. H. Elliot describes an operation which seems to be a decided improvement on all previous ones of the kind. This consists simply in trephining a hole in the sclera beneath a conjunctival flap, and removing a portion of the iris to prevent its prolapse. Major Elliot does not mention the kind of trephine employed, but I assume it was that of v. Hippel. He states that he has long had this operation in mind, and is surprised that others have not thought of it. I feel sure that many others, as I myself, have thought of it, but without actual trial,

under the impression that it would be impracticable to trephine the sclera in this way on the living patient. Major Elliot states that the diameter of the trephine used was two millimetres. It is not strange, therefore, that in some cases he injured the ciliary body. I infer from Major Elliot's paper that sometimes, exactly how often is not stated, it was necessary to complete the operation by means of scissors. This would, of course, give a ragged edge to the inside of the wound. In any case it would seem that the inside edge of the opening could not be clean-cut, and this would favour the closing of the opening by tissue proliferation.



Sclerostome, ready for use.

Sclerostome with inner rod removed to show construction.

The instrument here described seems to do away with these disadvantages, and to offer a more certain means of making the opening with the least possible trauma. Since the operation consists essentially in making a hole in the sclera, *i.e.*, sclerostomy, I have called the instrument a sclerostome. Although I have had this instrument outlined in my mind for over two years, it was not until the past year that I had it made.\*

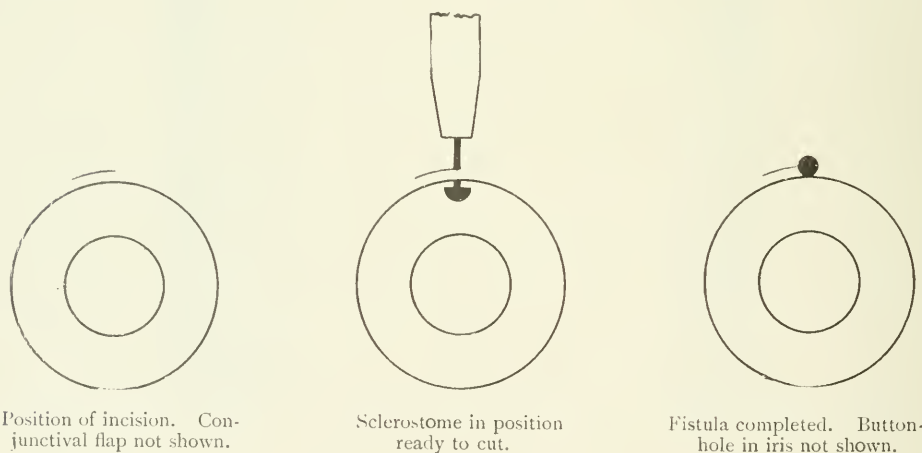
The illustrations will no doubt make the construction of the instrument sufficiently clear. It consists of two parts, an inner rod, and an outer tube,

\*The first operation, a successful one, performed with this instrument was at the Massachusetts Charitable Eye and Ear Infirmary, November 23, 1909. The instrument was made for me by Codman and Shurtleff, of Boston. It was shown at a meeting of the New England Ophthalmological Society, December 9th, 1909.



which has at one end a sharp cutting edge like a trephine. The inside diameter of the cutting end of the tube is 1.4 millimetres. The inner rod fits snugly into the outer tube, especially near its cutting end. Projecting from this rod is a thinner rod about 2 millimetres long, which carries at its end a button with a rounded base and a flat face. The button exactly fits into the outer tube when drawn up into it. The upper part of the main rod screws into the upper part of the outer tube, so that by holding the handle of the rod with one hand, and turning the tube with the other, the cutting edge of the tube is forced over the button. The instrument, it will be seen, combines the actions of a punch and a trephine.

In carrying out the operation, a large conjunctival flap is first dissected up, and then by means of a small broad bent needle, keratome, or Graefe knife, an incision 2.5 to 3 millimetres long is made parallel with and at about one half millimetre from the limbus. One end of the incision should lie under the middle of the conjunctival flap. The button of the instrument is then gently introduced through the incision, the instrument being tilted at an angle to render this easy of accomplishment. After the anterior chamber is entered, the instrument is held perpendicular to the sclera and carried to one side, so that the fine rod with the button fits closely in the end of the incision corresponding to the middle of the conjunctival flap. The outer tube is now screwed



Position of incision. Conjunctival flap not shown.

Sclerostome in position ready to cut.

Fistula completed. Button-hole in iris not shown.

down, the inner rod being held stationary, or turned slightly in the opposite direction if necessary to obviate undue twisting of the eye. If resistance is encountered, as it may be towards the end, the outer tube may be screwed backwards and forwards a few times instead of continuously forward. A clean round hole is thus cut in the sclera. The diameter of the hole is only one millimetre, somewhat less than that of the cutting edge of the instrument.

A small button-hole is now made in the iris, exactly beneath the hole in the sclera. The conjunctival flap may be sutured or not, as thought advisable. In case an iridectomy has previously been done, a conjunctival flap may be unnecessary, since here a small opening in the conjunctiva would no doubt suffice.

The instrument illustrated above has proved satisfactory, but I think it could be improved in minor details. It would be preferable to have the handles made larger and corrugated, and to decrease the pitch of the screw, so that

the cutting would be done less abruptly. It is important that the cutting edge should be sharp and true. The instrument could, of course, be made larger, but the disadvantages of a large opening have been pointed out. It would be undesirable also, I think, to make two holes, one at each end of the incision, as this would increase the tendency of each to close.

Thus far I have performed the operation in human subjects only on two blind painful glaucomatous eyes. The results, however, have sufficed to show that the opening remains patent and is effective in lowering the tension. For a few days following the operation the hole in the sclera is not visible, being hidden by the swollen and congested conjunctival flap, but later it can be plainly seen. I have also performed the operation with most successful results upon rabbits' eyes, and I hope later to make an experimental and histological study of the changes which take place in rabbits' eyes after this operation. The possibility of establishing drainage from the vitreous chamber with this instrument should also be investigated. In the human cases I have performed the operation under cocaine anæsthesia, but with unruly patients, at least, I should advise general anæsthesia, to avoid the danger of injuring the lens while performing the iridectomy. This danger is, of course, no greater than in the case of any iridectomy.

If this operation fulfils its promise, as I am confident it will, it should be the operation of choice for all forms of glaucoma, including buphthalmos. It should be preferred to simple iridectomy if only because it leaves the pupil round. Many, probably, would prefer in certain cases to perform iridectomy first, and sclerostomy later if necessary. In cases of acute glaucoma it would perhaps be advisable to do a preliminary posterior sclerotomy in order to restore the anterior chamber. In cases of chronic glaucoma and glaucoma simplex it will no doubt be possible to postpone sclerostomy until it is definitely determined that myotics are ineffective, because a late sclerostomy, in contrast to iridectomy, should be equally as effective as an early operation so far as the relief of tension is concerned. If in any case the opening should after a time close up, the operation could easily be repeated in the same place or elsewhere.

Aside from the relief of glaucoma, another purpose for which the sclerostome might be used would be to produce a sub-conjunctival scleral fistula beneath a separated retina to drain away the sub-retinal fluid. I have not, however had occasion to use it for this purpose.

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## REVIEW.

### DETACHMENT OF THE RETINA REVIEWED,

BY

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PART III. (*continued*).

### II.—MEDICAL TREATMENT.

IT would be an impossible task within the limits of a Review to survey completely the medical treatment of detachment, especially since cures, more or less complete, have been attributed to such *combinations* of therapeutic measures that one can not determine to which part of the fusillade of drugs the cure is to be attributed.

Medical treatment, sometimes in association only with rest in bed more or less prolonged, sometimes as complementary to surgical treatment, has been employed at all periods. Such "expectant" treatment, employed apart from surgical procedures, has had its vogue at various times. At the present moment it represents, probably, the line taken by the majority of ophthalmologists. That its importance—especially in regard to prolonged rest—is very great there can be no doubt; yet for the reasons stated I cannot undertake to present it chronologically. Some of the remedial measures of the older surgeons will be found in the opening paragraphs of Part I (September 1909). To these must be added such measures as the artificial leech to the temple, massage of the eye, the compress bandage, mercurial friction, diaphoresis and diuresis, and such locally applied drugs as eserine, atropine, and dionin.

### III.—THE HISTORY OF SURGICAL TREATMENT.

It might be possible to compile a history of the treatment of detachment from the writings of those authors who have condescended to mention the work of their predecessors, were it not for the fact that most usually such writers are in a hurry to propound some method of their own. Personal bias does not tend towards good history, so, since I have nothing of my own to put forward, and since my whole object here is to set out in proper chronological order the various surgical procedures, I intend to depend upon my notes of the literature, trusting that inevitable mistakes may be ascribed to the inherent difficulty of the task and the necessity for compression, and that such errors as may occur will be duly corrected by those readers of THE OPHTHALMOSCOPE who have better knowledge than myself. The plan of grouping the various methods, as far as may be possible under headings which attempt to explain the object proposed to be attained, is one which I trust may prove acceptable. It is probably the only plan by which confusion can be avoided.

#### Operations Aiming at Simple Evacuation of Fluid.

**Scleral Puncture.**—Simple puncture of the sclerotic at the site of the detachment with a view to the evacuation of fluid is not only the oldest operation for the treatment of retinal detachment, but is the only one which has lived right through a period of half a century. It is in use at the present day

Credit has been given to Sichel<sup>1</sup> as its originator about 1859, but, at this far away date, it is open to doubt whether the operation was performed for detachment of the retina or for some form of glaucoma. In any case, so far back as 1804 Ware<sup>2</sup> punctured the sclerotic with a needle and evacuated fluid in a case which, although it was called sub-choroid dropsy, was probably in reality glaucomatous.

After its introduction, or reintroduction, by Sichel, scleral puncture was for a time overshadowed by the operations of Graefe and of Bowman, but it was eventually used in Graefe's clinique in 1877<sup>3</sup>. In its simplest form, namely puncture with a needle or a narrow knife, it has been employed frequently up to the present day.

Various modifications of this simple evacuation have been proposed and carried out from time to time.

**Wolfe's Operation.**—Wolfe<sup>4</sup>, of Glasgow, in 1878, introduced his new operation with a flourish of trumpets, and the trumpets continued to blare for a number of years, not only owing to the enthusiasm of Wolfe's *entourage*, but through the support given to the operation by Campart<sup>5</sup>, Snell<sup>6</sup>, Coppez<sup>7</sup>, and others. Yet, after all, Wolfe's operation resolves itself into scleral puncture performed with a certain degree of elaboration. The conjunctiva is dissected off the sclerotic and the latter is incised obliquely, far back between the external and inferior recti, with a special keratome (de Wecker's) having only the point sharpened. Fluid is evacuated and the conjunctival wound is then stitched.

**Prevention of rapid Healing.**—With the intention of preventing the rapid healing of an ordinary scleral puncture various things have been done. Galezowski (1872) in one case<sup>8</sup> stitched the retina to a scleral incision. McKeown<sup>9</sup>, of Belfast, in 1877, after lifting a flap of conjunctiva downwards and inwards cut out a piece of sclerotic and choroid about a line in diameter and reapplied the conjunctiva. In another case he made the operation more elaborate. The sclerotic was first thinned, and then a flap of the thinned sclerotic was turned back and stitched to the sclerotic with gold thread, with the object of presenting a serous surface which might not so readily unite with the rest of the margin of the wound. What happened to the wound and even to the gold thread was never discovered.

Higgins<sup>10</sup>, in 1879, trephined the sclerotic and then punctured the choroid.

Parinaud<sup>11</sup> some years later (1884) excised a portion of sclera 4 to 5 mm. in diameter, with the object of making repeated punctures and retarding cicatrization.

**Aspiration.**—Aspiration by means of a syringe, as practised by Galezowski<sup>12</sup> in the eighties, is also a modification of puncture.

**Hirschberg's Method.**—Hirschberg<sup>13</sup> opened the eyeball in its upper outer part in such a way as to allow the fluid to form a sub-conjunctival bleb. (1891).

Some other operations in which the subretinal fluid is evacuated, must be described under other headings, since the object to be attained has been something more than mere evacuation.

### Operations which aim at Drainage of the Sub-retinal Pocket.

Drainage of the eye for a non-septic disease is a procedure which at the present time no sane man is likely to attempt. In earlier times it must have presented most fascinating possibilities to its originators. It may be dismissed very shortly. I am not sure to whom belongs the credit of this procedure, but it apparently lies between Madame Ribard<sup>15</sup>, E. Martin<sup>16</sup>, and de Wecker<sup>17</sup>, in or about the year 1876. Martin's operation consisted in



passing a curved hollow needle through sclera and choroid far back, puncture and counter-puncture being eight to ten millimetres apart; then introducing two silver threads into the tube of the needle, and, the latter having been withdrawn, knotting the ends of the threads, flattening the knot, and allowing the whole thing to become buried in the conjunctiva. Ribard and de Wecker appear to have used both single and double gold threads, and ultimately de Wecker used a short gold drainage tube, with a shoulder to prevent its slipping inwards, which he introduced after careful dissection of the conjunctiva and the capsule of Tenon. The capsule and conjunctiva having been stitched over the mouth of the tube the latter remained as a permanent drain. de Wecker gives the credit of this tube to Martin. Such drains seem to have been well enough tolerated in some cases, but in others irido-choroiditis and panophthalmitis resulted, as one might expect, and the method was given up. I can find no trustworthy accounts of any cures. Nevertheless Eve<sup>18</sup> in 1896 revived the method, using a horsehair drain. The result was *nil*.

### Iridectomy.

The interesting point about iridectomy as a curative operation for detachment of the retina is that among older writers there seems to have been some supposed connection between detachment and glaucoma. At the present day it seems difficult to imagine how this idea gained currency. Of course, secondary glaucoma may be associated with detachment, but so far as I can gather the supposed association was not of this kind. The resemblance—in ætiology—lay between simple detachment and primary glaucoma. Thus, Galezowski<sup>19</sup>, who apparently fathered iridectomy for detachment in 1872, distinctly stated that he regarded detachment of the retina as a glaucomatous affection. Dransart<sup>20</sup>, who enthusiastically practised iridectomy for detachment, affirmed in 1885 that the glaucomatous and myopic processes are allied to detachment and are due to circulatory troubles—a possibility which may be conceded at the present day without admitting the identity of glaucoma and myopia. In Dransart's view, iridectomy—being the regulator *par excellence* of the intra-ocular circulation—was the best treatment for detachment. Other writers held that the value of iridectomy lay in the sclerotomy which allowed escape of the "choroidal exudate." In any case, for a period of about fourteen years, iridectomy was in high favour. Numerous "improvements," "ameliorations," nay, even "cures" were recorded, and then in 1886 Galezowzki<sup>21</sup>, who had introduced the method, announced that "the success which he obtained at first had not been permanent." The final doom was probably pronounced two years later by Coppez<sup>22</sup> who declared that in five out of eighteen cases the result had been disastrous.

### Discission Operations.

With a view to orderly description I have taken up in series those operations which have for a definite aim removal of fluid from the eye. It is necessary now to return to the early operations of von Graefe and of Bowman and to certain operations of a similar type undertaken in later years. These I shall group together under the general heading of *discission* operations.

**von Graefe's operation.**—von Graefe<sup>23</sup>, in 1863, disliked the operation of scleral puncture, for, he said, with a diminished vitreous pressure there will be further exudation of fluid. Having observed that improvement takes place sometimes after spontaneous perforation of the detached retina—an observation which certain cases in later years clearly

substantiate—he devised his method of making a communication between the subretinal fluid and the vitreous, and, as an additional procedure, the division of membranous opacities in the vitreous. The division of the retina was performed with a sickle-shaped needle passed through the sclera on the opposite side to the detachment, and, according to de Wecker, was sometimes controlled by the use of a forehead mirror. von Graefe declared that the procedure was safe, that improvement usually resulted, though relapses were frequent, and that membranous opacities in the vitreous tended to shrink and absorb when they had been divided.

**Bowman's operation.**—In the following year Bowman<sup>24</sup> modified the Graefe operation by tearing the retina with two needles. No harm resulted. Some cases improved, others did not.

**de Wecker's operation.** About the same time—that is, in 1864—de Wecker<sup>25</sup> combined a cutting needle with a canula. This trocar and canula was introduced from above between the superior and external recti, the retinal pocket was punctured, the needle withdrawn, and the fluid evacuated. Finally, in withdrawing the canula it was given a "*mouvement à bascule*," so as to perform practically the duty of the Graefe knife-needle in tearing the retina.

The statements of Graefe and Bowman as to the harmlessness of these discission operations were not confirmed. Various reports of successes and failures appeared in the literature of the succeeding few years. Hirschmann<sup>26</sup> in 1866 had known three patients to lose their sight from acute inflammation following retinal puncture. Hirschberg<sup>27</sup> by the year 1879 had given up Graefe's method altogether, and from this date it passed out of practice for some years, only to turn up again in the hands of de Wecker<sup>28</sup> in 1888.

Holding to the Leber-Nordenson hypothesis—that detachment occurs because the retina becomes pathologically adherent to the vitreous, the vitreous shrinks and tears the retina where it is adherent, and the pre-retinal fluid passes into the subretinal space—de Wecker declared that what we require to do is, not to let out the fluid (which does no good), but to detach the retina from the vitreous, and suggested, further, that the fortunate cases of Graefe and Bowman were due to accidental tearing up of these vitreo-retinal adhesions.

**Deutschmann's operation.**—In spite of the advocacy of de Wecker, the discission method still slumbered until 1895, when, phoenix-like, it reappeared in the hands of Deutschmann<sup>29</sup>. Holding fast also to the Leber-Nordenson theory, Deutschmann operated by introducing peripherally a narrow double-edged knife through the coats of the eyeball, directing it obliquely across the vitreous, passing right through the pocket of the detached retina until the point touched the sclera, then withdrawing and giving the knife several lateral cutting movements. His objects in this operation—since slightly modified by the passage of the point of the knife through the opposite sclera until it is felt under the conjunctiva<sup>30</sup>—are as follow: (1) to evacuate the sub-retinal effusion; (2) to make at least two incisions in the detached retina; (3) to divide the bands in the retracted vitreous; and (4) to provide an exit for the fluid lying between the vitreous and the retina.

In this same year Galezowski<sup>48</sup> introduced what seems to be a very similar operation. He called it "posterior ophthalmotomy." It consisted in puncture, incision of the retina, and counter-puncture by means of a special curved knife. I have no further information about it.

Deutschmann's method of introducing rabbit's vitreous, after discission (*Durchschneidung*) has been performed, will be referred to under another heading. Since it is only in cases where discission fails that the second method is employed, the former may be allowed here to stand by itself in line with the methods of Graefe, Bowman, de Wecker, and Galezowski.

### Methods of treatment aiming at the formation of Choroido-retinal Adhesions.

We now open one of the most extraordinary chapters in this eventful history, the chapter which deals in particular with the endeavour to improve the condition of the visual organ by the injection into it of an irritant—such as tincture of iodine, pure or diluted—in order to cause adhesions between the retina and choroid. This particular method, generally called Schöler's method, of causing retino-choroidal adhesions by the injection of iodine was strangely foreshadowed, as so many methods have been foreshadowed at a much earlier date; for it is on record that Fano<sup>31</sup> in 1863 advised "*injections iodées*" into the subretinal pocket, and that Talko<sup>32</sup> in 1869 condemned the procedure as dangerous.

But the injection method (Fano excepted) was not the first one introduced with the object of causing choroido-retinal adhesions. In the year 1881 Abadie<sup>33</sup> stated the case, as it seemed to him, in this way:—Detachment of the retina is usually of local causation. Clinical observation, pathological anatomy, and experiments on animals show that where patches of chorio-retinitis exist the retina adheres to the choroid. By making such artificial adhesions one may hope to fix the retina to the underlying coats.

**Galvano-puncture.**—Abadie's method of reaching this objective was to puncture the sclera and choroid as far behind the ciliary region as possible with a narrow platinum knife at red heat. The sub-retinal fluid escapes, and adhesive inflammation at the spot holds the retina in place. The method is called galvano-puncture.

**Cauterization of the sclerotic.**—de Wecker,<sup>34</sup> in 1884, with precisely the same object in view, and possibly with the idea of going one better than Abadie, performed cauterization (six to eight "*points de feu*") of the sclera underneath the detachment, but expressly avoided puncturing it. This was done every week while the patient lay on his back with a compress bandage on the eye.

**The injection of irritants.**—In a sense, it seems natural that the foregoing methods, based upon the assumption that adhesive choroido-retinitis was to be aimed at, should have led up to the more directly provocative method of injecting an irritating fluid into the eye. It is unfortunate that I am unable to state who first (excluding the early case of Fano) performed such an operation, because I have been unable to discover a certain paper by Abadie in 1888, in which (it is elsewhere reported) Abadie describes how, after doing a sclerotomy, he provoked a local irritation by injecting *one* drop of "*liqueur de Piazza*." The result was "*satisfactory*"—a most usual word in these various records—but the conditions were aggravated by the use of *three* drops. Nor am I able to say exactly when Galezowski employed iodine injection. That he did so prior to Schöler (though anticipated, of course, by Fano) seems to be admitted. Galezowski states<sup>34a</sup> that whereas Schöler injects iodine into the vitreous, he, himself, always injects it between the retina and choroid.

In 1889 Schöler's little volume<sup>35</sup> on the iodine method was published, but I gather from collateral evidence that he first announced the method in 1885. Like Fano and Galezowski, he sought to produce an adhesive retinitis by the injection of tincture of iodine, but he injected it between the retina and vitreous, or into the deepest layers of the vitreous. By this method he claimed that an exudative retinitis caused the retina to be compressed against the choroid, so that it contracted solid adhesions. If the iodine were injected into the retinal pocket, an exudative retinitis was produced, which made matters worse by increasing the exudate already there. He



used a special curved canula with a steel cutting point and lateral eyes. One to six drops were injected very slowly into the posterior hemisphere: compressive bandage, dorsal decubitus, atropin. The considerable pain was relieved by morphine. It is stated by Schöler that reaction is not very great, and that a cure takes place after a few weeks.

Abadie,<sup>36</sup> encouraged by Schöler's general results, but not liking the "mishaps" which were admitted to occur, tried to perfect the method. He diluted the tincture with an equal quantity of water and added potassium iodide to it. He used only one and a half drops of his solution introduced, apparently, into the retinal pocket after withdrawing the effusion. The reaction is very slight. As a first effect the eye becomes very soft, then firms up again, though remaining subnormal in tension. After twenty-four hours the retina is re-attached, though hazy. In the following days the haziness disappears and ophthalmoscopically a patch of chorio-retinitis is seen. Abadie believed that the "cure" is not due merely to an adhesion, but that atrophy of the globe sets in to a certain extent, which prevents its further distension and consequent reproduction of the detachment. Taking this idea in conjunction with that already quoted on page 105 about destruction of the rods and cones, it is clear that Abadie was now fighting a losing battle, but it was not until 1893 that he finally gave up the method.<sup>37</sup> The iodine injection method seems to have given, in the hands of various writers, a certain number of good results, but, when negative results, aggravation of the condition, panophthalmitis, and even death from meningitis<sup>38</sup> gradually swelled the list of sequelæ, this method which—although I have made few references to individual writers—enjoyed an enormous reputation for about five years, gradually passed into the limbo of forgotten experiments in therapeutics and was, I believe, ultimately abandoned by its principal supporter, Schöler himself.

But if the iodine method for the production of choroido-retinal adhesions died out owing to its essential dangers, the simpler methods of galvano-puncture and cauterization of the sclera persisted. Indeed, I am inclined to say that next to simple puncture of the sclera, puncture with the cautery, cauterization without puncture, and combinations of these two have enjoyed a longer period of popularity than any other method; for Abadie introduced galvano-puncture in 1881, and this or such like treatment may be said to be in use at the present day. It is impossible to devote space to the details of this procedure as varied by different writers, but it may be said (in spite of the statement of Scheffels<sup>39</sup> that, experimentally upon rabbits, cauterization of the sclera *produces* detachment) that "ameliorations," "great ameliorations," and even positive "cures" have resulted from it. To some of these I shall refer later on.

**Multiple punctures.**—It is stated by Scheffels (*loco citato*) that Pagenstecher succeeded in causing adhesive choroido-retinitis by multiple punctures of sclera, choroid and retina with a fine steel needle.

**Electrolysis.**—In 1893 Abadie<sup>37</sup>, having thrown over the iodine treatment, jettisoned galvano-puncture as well, and with the same object of causing retino-choroidal adhesions, adopted as a second string to his bow, electrolysis. The first string was subconjunctival injections, of which he seems to have been one of the earliest users. With a special platino-iridium double edged electrolysis needle, introduced 2 mm. within the eye, Abadie applied 2 to 3 milliamperes for about five minutes, the positive pole being in the eye. He stated that no inflammatory reaction followed, and that on the following day ophthalmoscopically a round white plaque represented the zone attacked. One case had remained cured for over a year. Abadie was followed by de Grandmont<sup>40</sup> who used 5 m.a. for 5



minutes, Van Moll<sup>41</sup>, Terson<sup>42</sup>, using 2 to 3 m.a. for 5 minutes, Snell<sup>43</sup> with 2 m.a. for one minute, and Méralval. The method was criticised by Parinaud and by de Wecker<sup>44</sup> who held that electrolysis merely acted by drainage, by Montgomery<sup>45</sup> who saw inflammatory glaucoma follow it, by Lagrange<sup>46</sup> who said electrolysis was disastrous through the disengagement of gas bubbles and consequent increase of the detachment, and by de Wecker again in 1899<sup>47</sup> when he discarded every kind of intraocular interference. After this electrolysis was practically abandoned, but it is worth noting that experiments on animals by Chevalier and Méralval showed that no harm resulted from a current of 5 m.a. for one minute. (See Ref. 42, Terson).

### Methods which aim at increasing the Pressure in the Vitreous.

While it is true that the best known method of operating with the intention of causing the retina to be pressed against the choroid is that of Deutschmann, about which so much has been written recently by Deutschmann himself, it is by no means the first method proposed.

**Injection of saline.**—So long ago as 1882 Karl Grossmann<sup>49</sup> introduced what he called mechanical treatment. This consisted in increasing the intraocular tension by injecting normal saline into the vitreous and applying a firm bandage. No reaction followed, but the results as to improvement of the detachment were trifling.

**Injection of vitreous.**—Further, according to Grimsdale,<sup>50</sup> Adams Frost prior (?) to Deutschmann, suggested injection of vitreous, but found that the latter could not be made to flow through a needle of ordinary size.

Deutschmann<sup>51</sup> in 1895 introduced (1) the operation called by him "*Durchschneidung*" already referred to, and (2) as a last resort in hopeless cases the injection of animal vitreous. "I try," says Deutschmann, "with the animal vitreous body to obtain not only a mechanical pressure of the detached retina against the choroid, but also a firm welding of both membranes on an inflammatory basis with simultaneous better refilling of the eyeball<sup>52</sup>." The subretinal fluid is first got rid of either by a simple bi-section (*Durchschneidung*) immediately prior to the injection, or else by using a canula-knife. It is impossible to enter fully here into the *technique* of Deutschmann's method of preparing the various strengths of vitreous body to be used. Fortunately it is the less necessary to do so since the author has recently<sup>52</sup> contributed an article on the subject to THE OPHTHALMOSCOPE. Deutschmann's views on the pathogenesis of detachment have been referred to in Part I. of this Review.

These methods, it may be said, are still on trial and may be left to the proof of time as operations for general use. Deutschmann's claims for good results will be referred to later.

### Müller's operation to reduce the Size of the Eyeball.

It is obviously convenient to neglect strict chronological order and to present here, as a contrast to the method which aims at increasing vitreous pressure by injecting fluid vitreous or saline, the operation of Leopold Müller (about 1903) by which the capacity of the globe is reduced so as to attain the same end<sup>53</sup>. According to Müller the essential cause of detachment lies in the choroid. Choroidal transudation detaches the retina and creates space by absorption of the vitreous. He has shown in public (Royal Medical Society of Vienna) a case of detached retina cured by his operation. Before operation myopia = 9D. After operation hypermetropia = 4D. At the time of writing (1903) seven cases had been cured by his method. The operation is

thus described in Vidéky's abstract<sup>53</sup>. "Resection of the external wall of the orbit according to Krönlein's plan, followed by division of the external rectus muscle, first secured by two sutures. After this an oblong piece (20 mm. long and 8 to 10 mm. wide) was cut out of the sclera in such a way that the anterior edge of the wound lay 1 to 2 mm. behind the insertion of the external rectus muscle, while the posterior edge of the wound lay in about the region of the equator. The choroid was not damaged. Four to five sutures were then inserted, the choroid having been first punctured with a fine needle in order to allow the subretinal fluid to escape while the sutures were tied." The retina became reattached and the field normal. Sight = counting fingers at 3 metres.

Müller afterwards simplified his operation<sup>54</sup> in that, instead of resecting the sclera, the lips of the incision in it are allowed to slide over one another.

### The method of treatment which aims at causing a Transference of the subretinal fluid out of the Eyeball. Subconjunctival injection.

It is difficult to find a heading which shall be explanatory of the exact intention of subconjunctival injections. It is, I suppose, an undoubted fact that cures have been brought about by their means, but I am not well enough versed in physics to appreciate fully, or to balance one against the other, the views which have been held by different ophthalmologists on the *modus operandi*. The above heading is perhaps sufficiently vague to cover all the cases, and I shall content myself with indicating the views of the various writers as I deal with their modes of treatment in chronological order.

The ophthalmologist whose name comes most readily to mind in connection with subconjunctival injections is H. Dor. But it is to be remembered that Dor's method is a combined method of which injections form a part only, and that Dor, whose principal account was published in 1896, gives the credit of first using subconjunctival injections to Dianoux in 1895 (?). In this latter Dor is apparently incorrect, since de Wecker<sup>55</sup>, speaking at the *Société Française d'Ophthalmologie* in 1899, made the following statement.—"When Raehlmann, in 1876, published his theory on the causes of detachment of the retina, attributing it to exosmotic currents which traverse the retina. . . . I tried to intervene by directing the current to the outside of the eyeball by massive injections of saline solutions under the conjunctiva. For about a dozen years I have pursued these attempts, injecting a full syringe of salt solution under the conjunctiva and largely also under Tenon's capsule. After having varied the strength of the salt solution I turned my attention to sulphate of soda, which I have lately replaced by solutions of gelatine, which are quite painless." For details I must refer the reader to the original, but here at least is plain evidence of much early work on subconjunctival injections.

I am not aware that de Wecker published this work until the date given above, but in any case Abadie<sup>56</sup> in 1893, before resorting to electrolysis, gave—in myopic detachment—a subconjunctival injection of 1 drop of 1-1000 solution of sublimate and a subcutaneous injection of pilocarpine. Unfortunately, I have not the reference to Dianoux's paper in 1895, but, entering into the discussion on Teillais' case<sup>57</sup> he stated that he used 1 c.c. of a saturated solution of sodium chloride. In the same year Lodato<sup>58</sup> made a reference to Angelucci's method of injecting 0.50 to 1 c.c. of a 3 per cent. solution of sodium chloride every two to five days.

It is to be distinctly understood that Dor's method<sup>50</sup> is a combined treatment. Although, later on, subconjunctival injection may have become emphasised as the principal part of it, and although discussion raged around the proportions of various salts to be employed and methods of rendering the injections less painful, yet it is clear from the original paper (which describes a series of 15 cases, in at least 5 of which subconjunctival injections were not used) and from Dor's own statement eleven years later<sup>60</sup>, that the method was a combined one of which the injections formed only a part. Dor's *treatment*, then, consists in prolonged absolute dorsal decubitus (for two months, the bed being perfectly flat), the use of the artificial leech, cauterization of the sclera, occasionally sudorifics, and subconjunctival or subcapsular injections of a sterilized saturated (33 per cent.) solution of sodium chloride. From contemporary literature it seems that doubt arose as to whether the injections were to be subconjunctival or subcapsular. In 1902, L. Dor<sup>61</sup> stated that he and his father injected into Tenon's capsule. This brought a reply from de Wecker<sup>62</sup>, between whom and L. Dor there was much bickering, that according to Motais the capsule cannot be regarded as a closed cavity, and that when, after a supposed intracapsular injection, no conjunctival bleb appears, the injection may perhaps have been really made into the tissues of the orbit.

In 1897 Bourgeois<sup>63</sup> "in order to reinforce the enfeebled hygrometric state of the vitreous" used subcapsular injections of a mixture of substances possessing hygrometric properties, namely, neutral glycerine and sodium chloride, with sublimate as an antiseptic.

Jocqs<sup>63a</sup>, in 1901, having failed to cure a myopic detachment with weak subconjunctival injections of salt, succeeded with a single injection at saturation. "The use of saturated solution is in accordance with modern ideas as to isotonus and osmosis. The saturated salt solution exercises an attraction, direct or indirect, through the choroïdal vessels upon the subretinal fluid."

In the paper referred to <sup>61</sup>L. Dor gives the method as he used it in 1902. He does not insist on the dorsal decubitus, only on rest in a darkened room. He believes that the pain caused by the injections is due to the fluid being slightly acid. If carbonate of soda be added the pain is less, and in any case morphine should be given subcutaneously. The following is the composition of Dor's fluid of this date: a Pravaz syringefull to be injected into Tenon's capsule between the external and inferior recti:—Chloride of sodium 5 grammes, carbonate of soda, sulphate of soda, sulphate of potash, of each 0.40 gramme, phosphate of soda 0.10 gramme, distilled water to 20 grammes.

In the same year de Wecker<sup>62</sup> introduced the method of using animal vitreous as a vehicle for the salt. Whereas, in the ordinary way, anything over 10 per cent. of sodium chloride is excessively painful, the use of vitreous renders solutions up to 30 per cent. much less painful. Saline injections seemed to de Wecker to give the best results of any treatment in spite of the ætiological differences in cases.

In 1904 Dianoux<sup>64</sup> used the following fluid of which 4 to 5 c.c. were to be injected, namely:—Chloride of sodium 1 gramme, cane sugar 4 grammes, distilled water 100 grammes.

In the same year Guibert,<sup>65</sup> after obtaining improvement from de Wecker's gelatinized serum,<sup>55</sup> reached a complete cure with Trunccek's serum, the formula of which has been given me by Messrs. Martindale, namely: sodium sulphate 44, sodium chloride 492, sodium phosphate 15, sodium carbonate 21, potassium sulphate 40, water *q.s.* to make 10,000.

In 1906, Ramsay<sup>66</sup> published an interesting and unbiassed article on

various methods of treatment. Referring to subconjunctival injections, he stated that, following Wessely, he considered their action to be that of a counter-irritant. This view of the *modus operandi* of injections is one which is, I think, widely held.

In order to reduce the pain produced by saline injections, various anæsthetics have been employed. Thus, Darier<sup>67</sup> and others have used a few drops of aconin, 1 to 2 per cent., added to the injection. Dionin, followed by cocaine, as analgesic and anæsthetic applications, have been employed. Ellis<sup>71</sup> has employed injections of dionin. Alypin and other anæsthetics have also been added to the injection by various operators. (See under Reference 67).

Lastly, in 1907, Grandclément<sup>68</sup> has used subconjunctival injections of seawater.

In the foregoing account of the subconjunctival method, I have endeavoured to state only the principal facts as they are known to me about a treatment which has been very widely adopted and apparently with at least as much success as any other. Reaction from the first bright hopes of the method inevitably occurred, as it has occurred in the case of every treatment hitherto introduced. I shall spare my readers the details, but undoubtedly the main objection to subconjunctival treatment is the pain caused by it. Regarding H. Dor's method more particularly, we have the added objection of dorsal decubitus for months, a form of treatment which must of necessity be limited in its application. Dor, however, claims 37.05 per cent. of "satisfactory results" for his method,<sup>69</sup> which at the present day is mainly in competition with that of Deutschmann. The latter<sup>52</sup> claims that for a long time he has been constantly able to obtain 25 per cent. of successes.

Both methods are still on their trial.

### Unclassified Methods.

In 1887 Galezowski<sup>12</sup> described a method of suturing the retina with catgut. A suture was passed right across the eye in the horizontal meridian and the ends lightly knotted below the eye. The results do not seem to have been encouraging.

In 1894 Straub<sup>70</sup> incised the sclera over the detachment, and then injected *into the orbit* (through the conjunctival incision made to expose the sclera) a few drops of 1 in 5,000 solution of sublimate.

In 1908 Leslie Paton<sup>69</sup> described an operation in a case of detachment (exact nature not stated) involving the temporal part of the retina, V. =  $\frac{3}{6.5}$ . As the case is one of the few in which *recovery of function* took place (*vide supra* page 106) the operation deserves attention. It consisted in clearing the borders of the external rectus and then cauterizing a trough through the sclera above the muscle, behind the equator; fluid escaped and then more was withdrawn with a syringe. Finally, a Graefe knife was plunged through the retina presenting in the puncture, and was slowly withdrawn. A further puncture was made below the muscle.

I have finished my chronological account of the surgical treatment of detachment. That it will be found incomplete as to the actual records of methods goes almost without saying. That a great deal of detail has been omitted is due to the need for compression. It is impossible here to follow each method through as to results, but I hope in another and final instalment of this Review to draw together the conclusions as to results obtained from various methods of treatment, medical as well as surgical, and to discuss prognosis.



## PART III.

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## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

### I.—THE SPHINCTER NUCLEUS.

- (1) Bach, L.—The sphincter nucleus and the path of the pupillary light reflex in the corpora quadrigemina. (*Der Sphinkterkern und die Uebertragungsbahn des Licht-reflexes der Pupille im Vierhügel*). *Zeitschrift für Augenheilkunde*, August, 1909.
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- (1) Bach (Marburg).—In von Graefe's *Archiv*, Bd. LXX, Heft 3, Seite 539 u. ff., Bernheimer comes to the final conclusion that the sphincter nucleus is situated in the median group of the Edinger-Westphal nucleus. Bach enters the lists against this view, and brings forward Tsuchida's researches in support of his contention that Bernheimer has entirely failed to prove his case. Bernheimer depends directly upon four experiments in which he destroyed the Edinger-Westphal nucleus, and indirectly upon experiments in which parts of the brain in the neighbourhood of the oculo-motor nucleus were destroyed, and, further, upon the results of lesions made in the dorsal third of the proximal part of the pole of the oculo-motor nucleus.

In the experiments in which the median group of the Edinger-Westphal nucleus was destroyed, the light reflex was totally abolished. When the lesions were in the other situations mentioned, the light reflex remained intact.

Of the four apes in which the attempt to destroy these cell groups, only one lived for four weeks, the other three died within three days of the operation. Whereas no accurate account of these last three experiments is given, Bach confines his criticisms to theories deduced from the experiment upon the ape that survived.

The illustration which Bernheimer gives of the injured situation in the oculo-motor nucleus shows that on the side upon which the experiment was performed the proximal part of the right lateral main nucleus of the oculo-motorius is destroyed, but *no trace of the so-called Edinger-Westphal nucleus can be detected on either side*. Tsuchida agrees with this interpretation of the illustration. He concludes, with Bach, that Bernheimer's knowledge of the exact anatomy of the nucleus is imperfect.

After the ape had recovered, Bernheimer took instantaneous photographs of the eyes; 3 by flash light, and 3 by flash light after previous exposure to bright light. He writes, "The two series of photographs show that the left pupil reacts to light in the usual manner, whereas the right shows complete absence of the light reflex." Bach has made careful measurements of the pupils in these photographs, and finds that *both* pupils are smaller after exposure to light.

Bach holds that it is a physical impossibility to injure the Edinger-Westphal nucleus without at the same time doing serious damage to the lateral main nuclei; nor is it possible to draw any sharp line of demarcation between the two nuclei.

Again, Bernheimer says that the oculo-motor nuclear region is absolutely identical in apes and men, an opinion which he later modifies to tracing "a remarkable similitude." The real facts are that there are very wide differences in the anatomy of this region in man and apes. The so-called central nucleus of Perlias, in which Bernheimer, after evisceration of the globe, found an accurate unilateral degeneration, has in reality no existence at all in apes. The Edinger-Westphal nucleus is either absent altogether or exists in an entirely different form in apes.

Bach and Marina find no degeneration in these nuclei after evisceration.

He decides that the Edinger-Westphal nucleus cannot be shewn to have anything whatever to do with pupillary reflex. In man the pupil reaction has remained intact when the nucleus has been found totally destroyed, and cases are on record of total iridoplegia with a normal nucleus. We even know that in spite of *total degeneration of both oculo-motor nerves and their roots, and of nearly all the nerve cells in the main nuclei, the Edinger-Westphal nucleus has been found to be histologically normal*.

The existence of a path of nerve fibres, detected by Bernheimer by the Marchi degeneration method, from the anterior corpora quadrigemina to the region of the paired small-celled median nucleus of the oculo-motor nerve is held by Bach and Tsuchida to be far from proved. In Bach's opinion *the exact path of the pupil-reflex-arc from the anterior corpora quadrigemina to the oculo-motor nucleus is at present unknown*. T. HARRISON BUTLER.

(2) **Levinsohn, G.** (Berlin).—Bach, in a criticism of Bernheimer's work (v. Graefe's *Archiv für Ophthalmol.*, Band. LXX. S. 3), states: "In animals with a complete decussation of the optic nerve, the conditions are, as Levinsohn has pointed out, different, for in this case, for the sake of example, destruction of the right arcuate fibres determines a left-sided, that is a contralateral iridoplegia."

Whereas this sentence does not absolutely correspond to the fact, and may lead to misunderstanding, Levinsohn wishes to correct it. When he had caused loss of pupil reflex on the opposite side by injuries of the anterior corpora quadrigemina which extended to the neighbourhood of the Edinger-Westphal nucleus in cats and rabbits, he determined, with a certain degree of probability, that the fibres running in Meynert's decussation carry the light sensation for the pupil and lid reflex to the nucleus of the third and seventh nerves. But this in no-wise suggests that the so-called arcuate fibres are involved in the reflex. On the contrary, Levinsohn has proved that in rabbits all layers of the corpora quadrigemina down to the base aqueduct of Sylvius, necessarily therefore including the arcuate fibres, take no part in transmitting the afferent impulse. He has also extended this experimental fact to apes. Therefore, all theories in which the centripetal fibres course over the anterior corpora quadrigemina, including Bernheimer's and Majan's, which is adopted by Bach, are without exception, proved to be wrong. With reference to the origin of the centrifugal pupil-tract, Levinsohn, while testing Bernheimer's experiments, has convinced himself that any isolated destruction of the Edinger-Westphal nucleus without injury to surrounding structures is impossible. Nevertheless, he succeeded in causing iridoplegia in many instances by injuries in the immediate neighbourhood of this region. Further, he could determine with absolutely certainty that the sphincter and levator nucleus must lie within the oral third of the oculo-motor nucleus. Especial attention must be given to the destructive changes in the nucleus med. anter., and in the Edinger-Westphal nucleus, which in many cases followed extirpation of the ciliary ganglion in the cat. Levinsohn cannot agree with Bach's criticism of this fact. The difference in these nuclei upon the two sides was so very obvious that one must admit the reaction of ganglion extirpation upon them. This discovery must only be held to prove an intimate connection between the muscles of the eye and these nuclei. T. HARRISON BUTLER.

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## II.—COLOUR AND COLOUR-SENSE.

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- (1) Clerc, J.—A study of the colour-sense of railway employees and of the perception of coloured railway signals. (*Etude sur l'examen du sens chromatique des employés des voies ferrées et sur la perception des signaux colorés dans les chemins de fer.*) *Revue générale d'Ophtalmologie*, novembre-décembre, 1908.
- (2) Köllner, H.—Contributions to the pathology of the colour-sense. (*Beiträge zur Pathologie des Farbensinnes.*) *Zeitschrift für Augenheilkunde*, März and April, 1909.
- (3) Rémy.—The effect of ocular deviations in the observation of certain coloured signals. (*Influence des deviations oculaires sur les visions de certains signaux à feux colorés.*) *Recueil d'Ophtalmologie*, juillet, 1909.
- (4) Hessberg, Richard.—Contribution to congenital total colour-blindness. (*Ein Beitrag zur angeborenen totalen Farbenblindheit.*) *Klin. Monatsbl. f. Augenheilkunde*, August, 1909.



- (5) **Köllner, H.**—Contributions to the pathology of the colour-sense. (Beiträge zur Pathologie des Farbensinnes.) *Zeitschrift für Augenheilkunde*, September, 1909.
- (6) **Oliver, Charles A.**—The requirements and the regulation of signalling by colour. *Ophthalmology*, October, 1909.

(1) This long paper by **Clerc**, bearing largely on French railway practice, covers also a great deal of ground on the subjects of the physiology and anomalies of colour-vision. It should be read in the original.

ERNEST THOMSON.

(2) **Köllner**, of Berlin, describes a case in which, as the result of grey atrophy of the optic nerve, one eye had become totally colour blind, and the other partially so. This man was most carefully tested by the perimeter, with Helmholtz's colour-mixing apparatus, and with homogeneous spectral colours. The results are set forth in a paper which will be of value to the physiologist, and to him who makes a speciality of colour vision. Unless one is intimately acquainted with the various instruments used in testing colour values and matching spectral colours, however, it is exceedingly difficult to understand the experiments recounted and the theories deduced from them.

T. HARRISON BUTLER.

(3) The attention of **Rémy**, of Dijon, was drawn to two cases in which figures and words were transposed when they were read, *e.g.*, 74 was seen as 47. The mechanism of the production of this "inversion" can be demonstrated by means of the diploscope, and is essentially a diplopia, due to ocular deviation—with suppression of those letters or figures whose image falls on those areas of the retina which are farthest from the macula, the suppression of these more peripheral images is the more easily attained owing to their comparative faintness. Rémy shows that the same figures (or words) are suppressed in both homonymous and crossed diplopia. He draws attention to the practical importance of these facts in the case of coloured railway signals where red and green lights, placed side by side, might easily be confused. He suggests that if the signals were placed one above the other the confusion would not be so liable to occur.

J. JAMESON EVANS.

(4) Of four children, brothers and sisters, who were examined by **Hessberg**, three were totally colour-blind. Their parents had been first cousins, and it is interesting that the mother in a second marriage gave birth to three children who were not colour-blind. The want of colour perception was in each of the three cases associated with photophobia, convergent squint, nystagmus and hypermetropic astigmatism. In the light, fingers were counted at 2 to 4 metres distance. In a moderately darkened room, V. was  $\frac{1}{12}$ ,  $\frac{1}{6}$ , and  $\frac{1}{4}$  respectively; the limits of the visual fields were normal, but a small central absolute scotoma was determined in each case. The macula appeared somewhat abnormal in two of the children, the circular reflex having a smaller diameter but greater breadth than usual. Green appeared as the brightest part of the spectrum, which was shortened, especially at the red end. The retinal after-images were found to last unduly long, and the adaptation of the eyes in the dark took place in less than the usual time.

C. MARKUS.

(5) **Köllner** (Berlin).—Acquired defects in the color-sense following diseases of the eye have, up to the present, been little noticed. Generally speaking, this is due to the fact that the attempt to utilize alterations in the colour-sense as aids to diagnosis have not been very successful, and because the skilled physiologist, on the one hand, has not the necessary material, and the ophthalmologist, on the other hand, does not possess the very expensive

instruments which are necessary for the investigation. In a previous paper, which was abstracted in THE OPHTHALMOSCOPE, Köllner showed that in exudative diseases of the perceptive elements, the rods and cones, violet blindness (tritanopia) appeared; he points out, that an opposite defect, red-green blindness (protanopia and deuteranopia) is associated with disease of the nerve tracts between the retina and the cerebral cortex. It has been established that there is in diseases of the optic nerve a progressive deterioration of the colour-sense of a definite quantitative character, which always develops typically from a normal colour-sense up to total colour blindness. The symptoms are well known. Red and green objects appear to the patient less and less like their original colour; they became paler, the red more yellowish, until eventually all colours, including the spectral band, are seen in two hues only, blue and a warm colour like yellow, the stage of "red-green blindness." Both colours appear whitish; they are unsaturated. This loss of saturation increases, the yellow portion of the spectrum now appears almost white, the rest pale blue, till at last it is seen quite colourless.

Köllner's paper deals with the methods used to examine these cases, Helmholtz's spectral colour mixing apparatus, and Rayleigh's spectral colour matching apparatus, and with the results obtained from his investigation.

T. HARRISON BUTLER.

(6) This paper by Oliver, of Philadelphia, breaks no new ground, but is rather an epitome of his earlier publications on the practical aspects of colour vision defects. For general clinical purposes he considers that the loose wool method is still the best for various reasons, but for the examination of railroad and marine employees, special methods are advocated. All will agree with him as to the advisability of rendering the conditions of the tests as nearly as possible similar to the working conditions of the employee: as to the importance of uniformity in testing methods; and as to the value of periodical re-examination of the colour-sense of those engaged in railway and maritime work. He concludes his paper with a plea for an International Commission to draw up a series of standard tints for use in signalling, and would make it a duty of each National Government to inspect periodically, and to certify the accuracy of, the materials used for this purpose.

A. J. BALLANTYNE.

### III.—THE PATHOLOGY OF PHLYCTENULÆ.

Hayashi, M.—Contribution to the pathological anatomy of phlyctenulæ and phlyctenuloid affections (*Beiträge zur pathologischen Anatomie der Phlyktäne und phlyktäneähulicher Processe.*) *Klin. Monatsbl. f. Augenheilkunde*, November, 1909.

Hayashi excised and examined microscopically in serial sections five corneal and six conjunctival phlyctenulæ. The cases selected for this research were all recent, the aim being to ascertain the changes characteristic of the uncomplicated phlyctenular process. The latter presents itself in the cornea as an infiltration, consisting chiefly of leucocytes, immediately underneath Bowman's membrane. The epithelium and Bowman's membrane above this focus are intact at the earliest stage, but the former soon becomes necrotic and shed, while the latter proves still resistant. At last, erosion of Bowman's membrane supervenes, and causes a permanent defect in this structure. Conjunctival phlyctenulæ are solid nodules made up mainly of

leucocytes; they are richly vascularised. Numerous eosinophile cells are found near the blood-vessels, and elastic fibres form part of the nodule. The covering epithelium is normal in the beginning, but soon becomes thin and necrotic, an ulcer ensuing at last. So far, the anatomical substratum of phlyctenulæ lends no support to the view of their being tuberculous in nature. But Hayashi examined three further cases which differed clinically from phlyctenular disease by their greater severity, as evidenced by the multiple occurrence of nodules, the longer duration of the affection, and its great tendency to relapses and to implication of the cornea. Here the nodules had a typically tuberculous structure, although no bacilli were found; animal inoculations also proved negative. The toxins of tubercle bacilli may be held responsible for these last cases, and an endogenous agent of some kind for the former.

C. MARKUS.

#### IV.—EXPERIMENTAL STUDY OF CORNEAL TUBERCULOSIS.

**Stanculeanu.**—A contribution to the expérimental study of corneal tuberculosis. (*Contribution à l'étude expérimentale de la tuberculose cornéenne.*) *Ann. d'Oculistique*, avril, 1909.

**Stanculeanu**, of Bucarest, gives the results of an experimental investigation of corneal tuberculosis which he undertook, on the suggestion of Morax, with a view to explaining the ætiology of those cases of keratitis in which the appearance of the corneal infiltrations suggests that they are of tuberculous origin, although there is usually no other evidence of tuberculosis. The investigation was suggested by a case of sclero-corneal infiltration with attacks of congestion treated at the Lariboisière Hospital, in which subcutaneous injections of tuberculin caused a rise of temperature with congestion of the affected eye. As a further instance of keratitis, probably of tuberculous origin, the author records a case under his own care in the Coltza Hospital at Bucharest, in which the right eye was enlarged with punctiform corneal infiltrations, atrophic iris, blueish sclerotic, and ectasia in the ciliary region, while there were punctiform corneal opacities and slight iritis in the left eye. After an injection of 1 m. gr. of precipitated tuberculin, the temperature rose in 24 hours from  $37^{\circ}2'$  to  $38^{\circ}9'$ , and returned to normal sixty hours later.

The following is a *résumé* of the experiments:—

1. *Human Tuberculosis*.—Experiment 1. — One eye in each of three rabbits was inoculated in the centre of the cornea with pus from a cold abscess in a cervical gland, emulsified in serum. On the following days small rusty-coloured globules were seen deeply seated in the cornea. These became absorbed in five to twenty days, and the corneæ remained transparent for three to thirteen days, when small points of deep-seated infiltration appeared, which grew bigger, coalesced, became yellow, and ulcerated. Smears from the ulcers contained tubercle bacilli. The ulcers spread in one direction, healing in the opposite, and the upper part of the corneæ became vascularised, the iris and anterior chamber remaining normal. At this stage two rabbits were killed at end of 3 and  $3\frac{1}{2}$  months respectively, the third having died on the eleventh day. Their weight, which had been regularly taken, had increased. No sign, macroscopic or microscopic, of tubercle bacilli was found in the internal organs. A control injection was made in a guinea pig, which in two months developed enlarged glands containing tubercle bacilli.

Experiment 2.—The centres of the corneæ of both eyes of three rabbits were inoculated with matter from the tuberculous gland of a rabbit which had been injected with urine from a phthisical patient. The corneæ were clear in five hours after the injection, but small white infiltrations appeared in three to nine days; these developed as in the previous experiment but more virulently, causing perforation, and incarceration of the iris, in two of the rabbits.

Experiment 3.—Both corneæ of three rabbits were inoculated with an old culture of human bacilli emulsified in serum, some injections being central and others peripheral. A fortnight later infiltrations were present which coalesced and ulcerated. The peripheral tubercles ran a more benign course than the central ones.

Experiment 4.—The corneæ of the right eye of six rabbits were inoculated with a very dilute emulsion of human bacilli, some of the injections being central and others peripheral. One cornea, inoculated peripherally, had a slight infiltration at seat of inoculation on the fourth day which became absorbed in two weeks, after which the cornea remained clear for one month, when a fresh spot of infiltration developed in the same situation as the previous one. The animal was killed three weeks later when the upper third of the cornea was ulcerated, but apart from some fine spots of infiltration, the rest of it was clear and the iris was normal. The other five rabbits were killed early to study the first phases of the process.

The pathological appearances in all these eyes were so similar that a single description applies to them all. *Macroscopically*.—There was corneal infiltration, varying in extent, with ulceration; at its densest part the floors of the ulcers were covered with a purulent deposit containing tubercle bacilli. The ulcers were partly cicatrised and the corneæ were vascular. *Microscopically*.—The corneal epithelium was destroyed in some places but in others sent deep downgrowths into the corneal tissue. The superficial corneal layers were infiltrated with mono- and poly-nuclear migratory cells, the fixed corneal cells were swollen and their nuclei oval, there were new-formed blood-vessels, surrounded by pronounced diapedesis and some free bacilli. The middle corneal layers contained centres of necrosis, usually encapsuled, having numerous bacilli at their periphery and containing a few epithelial cells. The posterior corneal layers were thickened and transformed into fibrous bands. The other parts of the eyes were normal except for a few foci of infiltration at the base of the iris. Serial sections of four eyes during the incubation stage were examined. In some sections passing through the centre of the cornea of one of them there were a few hyperæmic vessels and nodules of mononuclears.

2. *Bovine Tuberculosis*.—Two sets of inoculations were made in rabbits with emulsions in serum of two strains of tubercle bacilli of different strengths. The results corresponded with those obtained with human bacilli, except that the infiltrations, instead of ulcerating, became absorbed in from five to fifty days. Three dogs were also injected with the stronger of the two emulsions of bovine bacilli. After an interval of two weeks, some points and lines of infiltration appeared, which soon disappeared and nothing further abnormal was observed.

Ten rabbits' eyes inoculated with bovine tuberculosis were enucleated early and their corneæ were embedded in paraffin and examined in serial sections. In one of these a single extra-cellular tubercle bacillus was found which had not provoked any reaction. In another the corneal lamellæ were separated and four or five large leucocytes were found attached to the surface of the opening which contained some acid-resisting tubercle bacilli and others transformed into granulations. There were no giant cells. The other corneæ were normal.



3. *Experiments with the bacillus of Timothée.*—For purposes of comparison some intra-corneal injections were made with this bacillus, which is acid resisting, and of slight virulence, and causes in the rabbit a non-fatal disease, characterised by the formation of giant cells and tubercles, which become absorbed. A bouillon emulsion, very rich in bacilli, from a fresh culture on agar, was used in three rabbits, and caused ulceration of the cornea in 24 hours, which cleaned and cicatrised in from 2 to 10 days. A second experiment with a weaker emulsion produced only an infiltration which tended to become absorbed. *Microscopically.*—In 24 hours there were inflammatory foci of polynuclears charged with bacilli distending the lamellæ. In five days the condition was unaltered. In seven days the polynuclears were gone, but there was an accumulation of mononuclears in the foci containing the bacilli. There were neither giant cells nor reaction at a distance, but there was some polynucleosis around the foci. In a month the bacilli had been absorbed, and the foci were replaced by elongated giant cells containing chromatic *débris* between the corneal lamellæ and anastomising by processes. These were surrounded by new-formed fibrous tissue, with elongated fibrils. The giant cells remained isolated and did not form tubercles. Clinically and pathologically, than, the lesions resulting from inoculation with the bacillus of Timothée and with tubercle bacilli resembled each other, but the former were less severe.

Instillations of two drops of a 1 per cent. solution of tuberculin were made in both the healthy and the inoculated eyes of the rabbits injected with human and bovine tuberculins during the period of incubation and evolution without ever producing a positive result.

Injections of 2 milligrammes of tuberculin were given under the skin of the abdomen to eight rabbits in various stages of the corneal affection. In two of these there was a rise of temperature of over a degree, but none of them showed any local reaction.

Stanculeanu draws the following conclusions from the results of this investigation :—

1. Injection of tuberculous material of human origin or of human tubercle bacilli into the corneæ of rabbits causes, after a period of incubation, an infiltration which spreads, ulcerating and destroying all the cornea without having any tendency to penetrate into the interior of the eye.

2. Intra-corneal injection of bovine tubercle bacilli in rabbits and dogs causes infiltration, starting as points or lines, which usually heals in about a month without leaving any trace.

3. Experimental keratitis caused by intra-corneal injection of Timothée's paratuberculous bacillus resembles experimental tuberculous keratitis, but is more benign and has greater tendency to undergo absorption.

R. J. COULTER.

## V.—FIBROMA OF ORBIT.

Steiner, L.—A fibroma of the orbit. (Ein Fibrom der Orbita.) *Centralbl. f. prak. Augenheilkunde*, September 19, 1909.

Cases of benign tumours of the orbit are very rare, and Steiner, of Surabaya, Java, records a case of a fibroma in a native girl, which had first been noticed shortly after birth, and which had grown gradually until when seen, the girl

being about 12 years old, had reached enormous proportions (see figure). It had caused the orbit to become much wider, and had flattened out the eyeball, of which only the milky cornea could be seen, although there was still



perception of light and some projection. The tumour, easily dissected out, proved to be a pure fibroma, with patches of calcareous degeneration (no ossification).  
A. LEVY.

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## VI.—TRACHOMA.

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- (1) Sulzer.—On the prophylaxis of trachoma. (La prophylaxie du trachome.) *Ann. d'Oculistique*, septembre, 1909.
- (2) Fernandez, J. Santos.—Difficulties of diagnosis of trachoma in the inspection of emigrants or immigrants. (Difficultés du diagnostic du trachome dans l'inspection des émigrants ou des immigrants.) *Recueil d'Ophthalmologie*, septembre, 1909.
- (3) Collins, E. Treacher.—Lesions of the lymphoid tissue of the conjunctiva. *Royal London Ophthalmic Hospital Reports*, January, 1910.

(1) E. Sulzer, of Paris, in a long article describing the history and geographical distribution of trachoma, expresses the opinion that although the disease is contagious, it is chiefly dangerous when associated with other forms of conjunctivitis which cause discharge. He suggests the following methods of prophylaxis to prevent its spread.—(1) Isolation of secreting cases and treatment of the added infection until the discharge ceases. (2) Instruction of trachomatous population as to the dangers and contagious nature of the disease. (3) Detention of soldiers or sailors discharged for trachoma in hospitals as long as they are dangerous to the civil population. (4) Isolation

of secreting cases with supervision of dry cases in schools and orphanages, with special classes, where infected are sufficiently numerous. (5) Active and frequent examination of the mercantile marine. (6) Examination of migratory labourers and treatment of those found infected at the place where the disease is discovered. (7) Similar treatment of emigrants under an international agreement. (8) Regulation of the great pilgrimages under international agreement.

R. J. COULTER.

(2) Most ophthalmic surgeons will agree with **Fernandez** that it is not always possible to diagnose trachoma by simple and single inspection of the conjunctiva. It is often necessary to get the true history of the patients' antecedents and surroundings, but in many cases the truth is difficult to arrive at.

The symptoms on which the diagnosis of trachoma is generally based, are not always to be relied on: the colour, thickness, irregularity of surface in granulations of the conjunctiva, especially the latter being marked in the upper lid with predominance in the *cul-de-sac* may be unreliable unless the antecedents are known. The ecchymotic spots which may be the result of circulatory obstruction by cedema, or infiltration of the conjunctiva, may also be set up by compression of the vessels when the upper lid is everted. The atrophy of the conjunctiva so often found in the later stages of trachoma, may also be due to exposure to inclement weather or irritating dust, to which workmen at various trades are exposed. The secretion is not characteristic of trachoma, and may be due to a catarrhal condition set up by bad hygienic conditions on the voyage, etc. The ptosis, monocular or binocular, may be due to a variety of causes. For these various reasons it is not an easy matter to do justice to the emigrant, and at the same time avoid putting the shipping companies to the expense of re-shipping the emigrants.

Neither histology nor bacteriology can be said to have made the diagnosis a certainty. The histological changes observed are hardly characteristic, and the process of preparing specimens is slow and troublesome. The bacteriological agent cannot yet be said to have been definitely established, notwithstanding the promising work done in this direction by Müller, Halberstädter, Prowazek, and Greeff.

J. JAMESON EVANS.

(3) This paper is one which was read by **E. T. Collins**, of London, before the Section of Ophthalmology of the British Medical Association, held at Belfast in 1909, and it was used for the purpose of opening a discussion on the subject of lymphoid disease of the conjunctiva. Owing to the long duration of the disease, but few have the opportunity of following it from start to finish. Collins, being attached to the Ophthalmia Schools under the Metropolitan Asylums Board, has had particular advantages in this respect, and during the last five years 2,441 patients have been admitted, of which 700 were suffering from trachoma. Many of the cases are seen at a stage far earlier than usual. At first the symptoms resemble those of an acute mucopurulent ophthalmia, which however does not yield to treatment, and when the congestion is somewhat abated typical lymphoid follicles appear in the tarsal conjunctiva, and the retro-tarsal folds become apparent. If energetic treatment is continued from the first, such cases are usually cured in about 18 months. He cites several cases proving the contagious nature of the disease, which there can be little doubt is due to a micro-organism. He describes the organisms found by Prowazek and by Greeff independently; but whatever the disease is due to, it is certainly spread only by direct inoculation and is not due to infection through the air; the germs are easily killed by drying and are not spore-bearing.

The evidence shows that the organism is situated in the fibro-adenoid layer of the conjunctiva. Collins then describes the histological appearance of the disease. Grey, scattered, avascular spots appear in a very early stage, which are rather smaller than a pin's head, and these are of considerable diagnostic importance. These have been termed elementary or primary granulations. The true trachoma organism appears to be non-pyogenic. Trachoma *per se* is essentially a chronic disease, and acute symptoms are due to a mixed infection, generally to either the gonococcus or the Koch-Weeks' bacillus. The trachoma follicles show a great tendency to become confluent and to produce bodies resembling in size and shape grains of boiled sago, which, as they enlarge, rupture, and the gelatinous contents escape. The fibrous tissue which forms in trachoma is probably mainly developed from fibroblasts derived from connective tissue cells, and, in cases of long standing, forms immediately beneath the epithelium; but if the cases are treated early, many are cured without the development of much fibrous tissue. Collins looks upon pannus as due both to the mechanical irritation from the roughened lid, and also to a real infection of trachoma. Of the immense number of different treatments adopted, those have proved the most effective which cause either rupture of the follicles on the surface and discharge of their contents, by causing intercurrent inflammation leading to the follicles becoming invaded by polynuclear leucocytes, or by the replacement of the adenoid layer by fibrous tissue, which by cutting off the blood supply, causes them to atrophy. These ends are obtained by "expression" followed by painting with sublimate 1-100, or by rubbing with sulphate of copper or by using copper ionization.

Jequiritol as a means of producing a violent chemical irritation is most useful, and excellent results are seen from it. X-rays have been largely employed, but their effect is uncertain, probably due to the difficulty of regulating the dosage; but Collins has seen no bad results. He had not seen much good result from the use of radium. *Grattage*, whether carried out with a hair brush, a spiked instrument, or a knife blade, acts by causing the development of fibrous tissue. Rapid cures should be regarded with suspicion; in Collins' opinion, it always takes from several months to several years to effect a cure, and then all follicular enlargement should have disappeared. The upper retrotarsal fold should be particularly examined.

It should be remembered that under various conditions follicles may develop which are not trachomatous. They are seen after the prolonged use of atropine or eserine, in children with a general tendency to adenoid formation, and in many cases of muco-purulent ophthalmia, and in these latter cases time only will tell the true nature of the follicles. Tubercle and pemphigus may produce scarring exactly like trachoma. Spring catarrh shows a remarkable development of eosinophiles, while it produces no contraction and leaves little if any sign of its former presence.

C. DEVEREUX MARSHALL.

## VII.—COLOBOMA OF THE OPTIC DISC.

- (1) Verderame, Ph.—A case of deep cupping at the entrance of the optic nerve. (Ueber einen Fall von tiefer Ektasie in der Gegend des Sehnerveneintritts.) *Arch. f. Augenheilk.*, Juli, 1907, S. 1, Illust.
- (2) Frenkel, H.—On partial cavities of the optic disc. (Sur cavités partielles de la papille du nerf optique.) *Ann. d'Oculistique*, T.CXLI, p. 101, février, 1909.



- (3) Rediger.—A case of congenital circumscribed excavation in the papilla. (*Ein Fall von Angeborener ungeschriebener Grubenbildung an der Papilla.*) *Zeitschrift für Augenheilkunde*, April, 1909.
- (4) Lauber, H.—Clinical and anatomical researches on crateriform partial coloboma of the optic nerve. (*Klinische und anatomische Untersuchungen über lochförmige partielle Kolobome des Sehnerven.*) *Zeitschrift für Augenheilkunde*, Juni, 1909.
- (5) Wessely, K.—Is there any genetic relationship between congenital hollows in the disc and optico-ciliary and cilio-retinal anastomoses. *Arch. f. Augenheilk.*, November, 1909, Bd. LXV, S. 98-101. Illus.

(1) **Verderame** describes the ophthalmoscopic appearances of a condition representing a three-fold concentric cupping of the posterior pole of the eye. A high degree of myopia was present, which amounted to  $-8D.$  for the macula, and  $-19D.$  for the central cup. The optic disc showed white atrophy and practically occupied the whole of the central depression. From it there emerged a number of small vessels spreading in all directions except downwards. The margins of the cup were sharply defined except below. Pigment was distributed in great quantities all over the area in question, while signs of recent inflammation and evidences of old inflammatory disturbances were to be found in various parts of it. The author discusses the aetiology of the case. He dismisses the diagnosis of coloboma of the optic nerve and looks upon the condition as being due to inflammatory changes, accompanied by an increase in tension. The optic disc and its neighbourhood the author regards as a *punctum minoris resistentiæ*, which gave way under these circumstances and led to the result described.

PERCIVAL J. HAY.

(2) **Frenkel** describes a case in which there was a depression, deeper in the centre than at its edges, in the temporal part of the optic disc of an eye with myopia of  $7D.$ , and corrected vision of  $1/6$  normal. The depression presented the appearance of a circular pigmented area, deeper in colour than the rest of the optic disc, and crossed by two small arteries and a larger vessel resembling a choroidal vein. The author calls attention to the necessity of distinguishing this condition from partial pigmentation, and refers to a recent paper (*Zeitschr. für Augenheilk.*,\* Bd. XIX, S. 505, 1908), in which Reis has collected twenty similar cases and discussed their nature and causation.

R. J. COULTER.

(3) **Rediger** (Marburg) adds another case of this interesting condition similar to those already collected by Reis. A beautiful painting of the optic disc fully explains the ophthalmoscopic appearance of the excavation.

T. HARRISON BUTLER.

(4) **Lauber** (Vienna) adds five more cases to those already recorded by Wiethe, Reis, Mohr, Szili, Stephenson, and others. In addition to the defect in the papilla, the third and fourth case had paracentral scotoma and concentric contraction of the visual field, which are shown on reproductions of the perimeter charts. The fifth case died of puerperal sepsis, and the anatomy of the anomaly is minutely described. The conditions of the optic disc are illustrated.

The author would appear to be ignorant of Coats' paper on the subject, which will be found in *The Royal London Ophthalmic Hospital Reports*, Vol. 17, Part II. (abstracted in *THE OPHTHALMOSCOPE*, 1909, p. 640).

T. HARRISON BUTLER.

\*For abstract see *THE OPHTHALMOSCOPE*, 1908, p. 912.

(5) **Wessely** (Würzburg) describes two cases of congenital "hollows" or "holes" in the optic disc. In the first one an optico-ciliary vein appeared in the hollow and passing to the nasal side, joined the central vein; in the second case a cilio-retinal artery came out of the hollow and supplied the macular region. The author recalls the investigations of Schultze, who demonstrated that the retinal vessels are developed from the ciliary vessels and only later become connected with the retinal vessels. He observes, that the optico-ciliary vessels found in his cases may represent a former more extensive optico-ciliary anastomosis which has only partly undergone the normal retrogressive changes, and suggests, that in those cases where the hollows alone have been found, this anastomosis has disappeared more completely. He thinks that the "hollows" are the remains of holes as passages through which the branches of the optico-ciliary and cilio-retinal network passed, and in support of his view points out that the hollows are often multiple, and that in 25 out of a total of 28 cases so far described, they have been situated on the temporal side of the disc, *i.e.*, in the situation where the cilio-retinal vessels are usually found.

PERCIVAL J. HAY.

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## VIII.—MAGNETS AND MAGNET OPERATIONS.

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- (1) **Mellinger, C.**—Upon the action of the Ring Magnet. (*Ueber die Wirkungsweise des Innenpolmagneten.*) *Zeitschrift für Augenheilkunde*, März, 1909.
- (2) **Hirschberg, J.**—A rare magnet operation. (*Ein seltener Fall von Magnet Operation.*) *Centralbl. f. prak. Augenheilk.*, Juli, 1909.
- (3) **Burnham, G. H.**—Two cases of steel in the interior of the eye and their successful treatment. *Canadian Practitioner and Review*, Oct., 1909.

(1) **Mellinger** (Bâsle).—In an article contributed to the *Zeitschrift für Augenheilkunde* (Bd. xx, H. 6, S. 546) Schirmer gave his reasons for not approving of the ring magnet. These objections were alluded to in an article upon the ring magnet published in *THE OPHTHALMOSCOPE* for 1909. Mellinger, the inventor of the magnet, now shews that Schirmer's objections are either not compatible with fact, or are common to all giant magnets. The ring magnet in the Bâsle clinic has given and continues to give satisfactory results.

T. HARRISON BUTLER.

(2) In a short introduction to this paper, **Hirschberg**, of Berlin, emphasises the necessity of studying each case of metallic foreign body in the eye separately, since no rules of treatment can be drawn up for all cases. The most difficult cases are those where a very small body lodges in the ciliary region. Even the most powerful magnet will have very slight power, and the resistance offered by the fibres of this region will be very great. One method of dealing with these conditions is recounted in the following case:

The patient was a man who four days before being seen received a small piece of iron in his eye, and on examination, showed a  $1\frac{1}{2}$  mm. wound in the nasal half of his cornea, a slight tear in the iris near the pupillary margin, and a corresponding wound in the lens-capsule. The lens was opaque. The sideroscope showed the presence of an iron foreign body in the ciliary region below. Many attempts were made during the following ten days to bring this

body into the anterior chamber, but always unsuccessfully. It was therefore decided to open the eyeball and to introduce the hand-magnet. To make an incision in the region of the ciliary body is, as a rule, inadvisable on account of the hæmorrhage, and the serious consequences which it may subsequently entail—and therefore in this case, as the lens was already opaque, it was decided to perform an iridectomy and introduce the magnet through the zonule, and this was done under deep anæsthesia and the third attempt with the hand-magnet was successful. The splinter was 1 mm. long,  $\frac{1}{2}$  mm. wide, and weighed 1.4 mg. The wound healed perfectly, and all that now remains to be done is to extract the cataract.

A. LEVY.

(3) **Burnham**, of Toronto, after noting how hopeless our position used to be in the presence of a foreign body within the globe from fear of sympathetic ophthalmia, writes: "I can say regarding this latter disease, that of this justly dreaded affection, I have not the same fear that oculists in general seem to have, for I have succeeded in saving eyes which have suffered from the milder and also from the worst forms of sympathetic disease."

The X-ray and the Haab magnet have done away with the feeling of inability to cope with foreign body cases. Two cases are quoted. In the first the piece of steel was located in the vitreous. During entry the steel had wounded the inner third of the cornea, iris, and lens. By use of the magnet the steel presented itself through the outer iris, but from here could not be moved until the wound was elongated to the opposite corneal margin, when the magnet quickly removed it. The elongation of the corneal wound enabled one to draw on the foreign body in a straight line. There was much disturbance of the various structures, and consequent difficulty in saving the eye. Iodide of potassium and mercury were given internally, and ice was applied upon the closed lids. After two months the eye was perfectly quiet. The second cure was in a man whose eye was wounded by a piece of steel which penetrated the outer cornea and iris, and lodged midway between the lens and ciliary body, apparently without affecting either of them. An opening was made in the cornea opposite to the piece of steel, and, finally, after one hour and a quarter, the steel attached itself to the tip of the magnet. The first case took two hours, illustrating the need of perseverance if one wishes to succeed.

Alloys of iron may be wholly or nearly non-magnetic, and special steels differ widely in their behaviour when placed in the magnetic field.

HANFORD MCKEE.

## IX.—EVULSION OF THE OPTIC NERVE AND EYE.

- (1) Hesse, R.—A case of partial evulsion of the optic nerve. (*Ein Fall von teilweiser Ausreissung des Sehnerven.*) *Zeitschr. f. Augenheilk.*, Januar, 1907.
- (2) Delord, Bernadon.—A case of complete traumatic luxation of the globe. (*Sur un cas de luxation traumatique complète du globe oculaire.*) *L'Ophthalmologie Provinciale*, avril, 1909.
- (3) Chevallereau and Liégard.—Traumatic tearing-out of the eyeball and the optic nerve. (*Arrachement traumatique du globe de l'œil et du nerf optique.*) *Archives d'Ophthalmologie*, mai, 1909.

- (4) **Williams, Carl.**—A case of avulsio bulbi. *Annals of Ophthalmology*, Vol. XVIII, July, 1909, p. 487.
- (5) **van Geuns, J. R.**—A case of evulsion of the optic nerve without tearing of the conjunctiva. (Een geval van afscheuring van den nervus opticus zonder verscheuring van de conjunctiva.) *Nederlandsch Tydschrift voor Geneeskunde*, 1909, p. 595.
- (6) **Turnbull, A. E.**—Evulsion of the eyeball during instrumental delivery. *British Medical Journal*, November 27th, 1909.
- (7) **Donaldson James.**—Avulsion of the eyeball during instrumental delivery. *British Medical Journal*, January 28th, 1910.

(1) **Hesse** relates the case of a boy, 13 years of age, injured by a school-fellow, who drove the point of a stick into the region of the inner angle of the orbit. There was great pain and hæmorrhage and, apparently, immediate blindness. On examination, the anterior chamber was filled with blood and the edge of the dislocated lens could just be made out. The pain continued for some days, and as the eye remained blind, it was enucleated. Externally, the eyeball showed no sign of an injury, nor that portion, about 3mm., of the optic nerve which had been removed with it. On section, the anterior chamber was filled with blood, the lens dislocated backwards and upwards, the retina entirely detached and to a large extent torn away at the ora serrata; at the disc there was a partial tearing out of the optic nerve. The lamina cribrosa was torn away from the sclera on the outer side and the nerve from the retina. As a result of this tear, vitreous found its way backwards into the sheath of the nerve as well as a quantity of blood from the torn retinal vessels. The dural sheath was nowhere injured but blended normally with the sclera. The mechanism of the injury is discussed; the nerve could not have been directly wounded, because the injury was not a deep one. The explanation offered is that the eye was forcibly rotated inwards by the offending body and the nerve stretched and torn on its outer side where the tension would be greatest. A. LEVY.

(2) This case, recorded by **Delord**, of Nîmes, occurred in a man who, seized with an attack of vertigo, fell against a double-pointed hook, which was used in connection with the fire-place. One point appears to have entered the orbit at the side of the globe, then getting behind it, left the orbit by causing a large tear at the external canthus; on its way the hook tore through the ocular muscles. The globe was found intact, lying outside the lids and on the cheek, attached only by the optic nerve. BERNARD CRIDLAND.

(3) **Chevallereau** and **Liégard** report a case of dislocation of the eyeball, the facts of which are as follows.—A man, 37 years of age, presented himself at the Quinze-Vingts with his left eye literally on his cheek. In fact, the globe was suspended by the external rectus, the inferior rectus, and the inferior oblique muscles. The other muscles, as well as the optic nerve, were torn through. Two days before, the patient went to bed without a light in his room. He first pulled off his apron full of tools, and placed it on a trunk, but it slipped. While trying to pick it up, he struck himself against one of the wooden uprights of a garden chair. He at once experienced some pain. Nevertheless, he undressed, and went to bed without taking the trouble to light a candle. He slept well. It was not until next morning, when he looked at himself in the glass, that he realized the gravity of the accident. He was, indeed, as the authors remark, a man of profoundly philosophical temperament. SYDNEY STEPHENSON.



(4) **Williams** draws attention to the two conditions, luxation and avulsion of the eye. The former is relatively common, and may occur spontaneously, whereas the latter is rare and traumatism is necessary.

A case is reported as follows.—The patient, a man aged 60 years, was returning home at night. Whilst driving he was compelled to turn aside to avoid a plumber's waggon drawn up at the curb. From the rear of the waggon protruded several feet of gas pipe. The patient, as he was about to pass the waggon, was conscious of a sudden blow in the right eye followed by hæmorrhage. A bandage was applied and on its removal two hours later, two clean-cut wounds, corresponding to the supra- and infra-orbital arches, were discovered. The globe itself was found lying uninjured upon the cheek, being connected with the orbit by the external rectus muscle alone. The optic nerve was severed about seven millimetres behind the bulb. The remaining rectus was cut and the bulb detached, the wounds and orbit were cleansed, and sutures were inserted. Healing took place with some cicatricial contraction from the wound at the orbital margin, making the use of an artificial eye uncomfortable.

J. WHARRON.

(5) **van Geuns'** patient was a young man who fell from his bicycle in the street, probably with his eye on a peg protruding from a passing cart. The globe was dislocated in front of the lids, but although there was swelling of the lids and conjunctiva, no wound of the last-named could be detected, either on inspection or on enucleation of the eye, which was immediately performed.

G. F. ROCHAT.

(6) In a case of delayed labour in a 10-para, aged 34 years, who was known to have a generally contracted pelvis, **Turnbull**, of Dunbar, delivered the child with forceps. On examining the baby—a well-developed female—the right eyeball was found to be completely dislocated from the orbit. It lay upon the cheek, and the optic nerve was evidently torn right across. Under the circumstances, the eyeball was removed completely. Both mother and child made an uninterrupted recovery.

SYDNEY STEPHENSON.

(7) **Donaldson**, of Sanghenydd, under chloroform, delivered a multipara, by forceps, of a female baby. The child's left eye was lying upon her cheek. The eyeball was at once replaced. The child was last seen when she was three years of age, and the eye that had been dislocated was then apparently normal and its sight was quite good.

SYDNEY STEPHENSON.

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## X.—FAMILIAL OPTIC ATROPHY IN CHILDHOOD.

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**Behr, Carl.**—The complicated hereditary familial optic atrophy of childhood. (*Die komplizierte, hereditär-familäre Optikusatrophie des Kindesalters.*) *Klin. Monatsbl. f. Augenheilkunde*, August, 1909.

**Behr** describes a new pathological entity which in its ocular aspects approaches Leber's familial optic atrophy, while in other respects it has many points in common with hereditary spastic paraplegia, Little's disease, and Friedreich's ataxia. The complex of symptoms was observed in six male patients, of whom two were brothers: their ages ranged from three to thirteen years. The familial and hereditary nature of the disease appears to have been based in this series of cases not so much upon evidence as upon the analogy

with Leber's atrophy. The eye changes consisted in pallor of the optic discs, either complete or limited to the temporal halves, amblyopia, central scotoma, with slight irregular constriction of the visual fields, and nystagmus. In one case, hyperæmic discs with blurred outlines were seen, representing an earlier stage of retrobulbar neuritis. These ocular changes were associated with the following symptoms: exaggerated reflexes and increased muscular resistance in the limbs, slight ataxia, an unsteady swaying gait, weakness of the sphincter of the bladder, and a moderate degree of mental impairment. Imperfect descent of the testicles was seen in the majority of the cases, and, as further evidence of a faulty development, one child showed unilateral congenital cataract. The author distinguishes the symptom-complex described by him from Leber's atrophy by the respective names of "complicated infantile familial optic atrophy" and "uncomplicated juvenile familial optic atrophy."

C. MARKUS.

## XI.—SURGICAL TREATMENT OF OPTIC NEURITIS.

- (1) Chance, Burton.—Optic neuritis in tumour of the brain. A plea for early surgical intervention. *Pennsylvania Medical Journal*, October, 1907.
- (2) Hippel, von.—Palliative trephining in choked disc. *L'Ophthalmologie Provinciale*, juin, 1909.
- (3) Fehr.—On the treatment of optic neuritis by trephining. (Zur Behandlung der Stauungspapille durch die Trepanation.) *Centralbl. f. prak. Augenheilk.*, Juli, 1909.
- (4) Cabannes.—A contribution to the study of trephining in cerebral tumours with papillary stasis or optic neuritis. (Contribution à l'étude de la trépanation dans les tumeurs cérébrales avec stase papillaire ou névrite optique.) *Ann. d'Oculistique*, août, 1909.

(1) In this paper, Chance makes a masterful appeal for "the necessity for prompt surgical intervention in all cases suggestive of tumour of the brain," he having been led to speak of it because of his personal interest in several very sad cases, which he now feels "were lost because this plan of treatment was not sufficiently urged until too late."

CHARLES A. OLIVER.

(2) von Hippel, of Heidelberg, in an article written from the ophthalmologist's point of view of the subject, discusses the question of the surgical treatment of "choked disc," and agrees with Horsley and American surgeons as to the advisability of early operation in these cases.

Three methods are mentioned, namely, lumbar puncture, ventricular puncture, and palliative trephining, of which he says the last is much the best.

His views are based on the statistics of 221 cases of choked disc which he has collected, and in which trephining was performed; a review of these is interesting. Of the 221, 53 died during or immediately following the operation; of the 168 remaining, choked disc reappeared in 100 cases, disappeared permanently in 18, and in the remainder information on this point was wanting.

Useful vision before operation was present in only 24 cases, and in 21 of these the vision was preserved or improved, 6, however, only temporarily, of the remaining three of the 24, one became worse, and two hopeless cases died following the operation. There was definite improvement of the vision in 14 cases, of which the visual acuity was, from a practical point of view, useless before operation, and in 26 cases where information of the vision before operation was wanting. These number 61 improved cases. The cases in which vision was quite useless at the time of operation number 92, and of these 20 died from the operation, 56 were not improved, 14 were improved, and of two no information was obtainable. Taking the 61 cases in which vision was improved by trephining, 41 lived more than six months, 31 more than a year, 25 more than two years, and 6 from 3 to 5 years. Of the 56 cases amongst those with useless vision, 11 lived more than a year, and 45 less than a year. Of the 11, 10 lived more than one year, 7 more than two, and 5 from 3 to 5 years. Next taking the cases where information of the vision is wanting, one finds that 60 lived more than a year, 26 of whom were "probably cured"; among 34 remaining, 20 lived more than two years, and 11 from 3 to 5 years. Among the 26 regarded as cured, the author says there are 11 the histories of which are open to criticism, because in one a malignant tumour was found, and in the remaining 10 the nature of the tumour could only be surmised. That 53 of the 221 cases died during or immediately following the operation is thought by von Hippel to be due to the fact that surgical procedure was resorted to much too late, some of the cases being *in extremis*.

From a consideration of these statistics, the author strongly emphasises the importance of early operation, and says in conclusion that:—(1) The prognosis for vision is favourable. (2) A certain number of cases can be definitely cured, which if operated on too late, or not at all, continue to live but are blind. (3) The survey of the cases operated on in the first stages of choked disc shows the value of the operation. (4) The danger, when the indication for operation is definite, is not very great.

Choked disc must be looked upon as an affection often curable, and it is the duty of an ophthalmic surgeon to avoid, as far as possible, blindness from this cause.

BERNARD CRIDLAND.

(3) **Fehr** discusses the question of early trephining for the relief of optic neuritis, and recounts a very interesting case.—The patient was a girl, aged 16, who for about four months had dimness of vision on stooping or lifting, and also headache and vomiting. The headache began in the right occipital region and spread over the whole head. She also had occasional diplopia. Nine years previously the patient had fallen on her head, and had some hæmorrhage from her mouth and nose; but was able to go to school next day. Six months after this she was suddenly seized by an attack of vomiting, excitement, and unconsciousness. This was treated as a tuberculous meningitis, but the patient recovered in four to five weeks, and had been well up to the beginning of the present illness. The patient, who was well-nourished, showed the following symptoms.—Slight paralysis of the external recti, especially the left. Vision  $5/7$ . Homonymous diplopia with increasing interval on looking to the right. Well-marked double optic neuritis, similar on both sides, with a swelling of 1.5 mm. Nervous system otherwise normal, except a slight tendency to turn towards the right when walking with her eyes shut. Under energetic treatment with mercury inunctions, the condition at first appeared to improve, but a fortnight later the severe headaches, giddiness, and vomiting reappeared, and, in addition, uncertain swaying gait on walking with closed eyes and a tendency to fall

backwards and to the right. The optic neuritis had become more intense, but the vision and fields were normal. One week later lumbar puncture was undertaken. The pressure was found to be 390 mm. (water), and 10-20 c.cm. of fluid were removed. The operation was repeated three times, without the slightest effect upon the symptoms of intra-cranial tension. The fluid also showed no abnormality. Three weeks later, puncture of the lateral ventricle was done, and 15 c.cm. of fluid allowed to escape, without any influence on the symptoms. Later, exploratory punctures of the left cerebrum and both cerebellar hemispheres were undertaken, without any effect, and without finding any evidence of tumour. The patient gradually got worse, and now also showed slight ataxia of the right arm, swaying when the eyes were open, and on closing her eyes, she at once fell backwards, with a slight tendency to the right. The abducens paralysis had now become complete on the left side and almost complete on the right. Pupils semi-dilated, and with sluggish reaction to light. Vision  $\frac{2}{3}$ , but the fields showed, right, a very large concentric limitation, and left, a similar slight limitation. The optic neuritis had increased. It was still impossible to make a definite diagnosis, but, having in view the failing vision, it was decided to perform a decompression operation, and, therefore, about two months after coming under observation, this was done, and an opening made in the cerebellar region, and much fluid drained away from the cisterna. No sign of tumour, however, was found. The wound healed by first intention, and the patient straightway began to improve, and a year later was quite well, with vision R.  $\frac{5}{10}$ , L.  $\frac{5}{6}$ , and the fields much improved, but she had a definite red-green blindness, and a partial post-neuritic atrophy; eye movements perfect.

From this case Fehr concludes that these operations should be undertaken early; that the dura must be opened; that punctures of the spinal membrane or ventricle are not effective substitutes; and, finally, that in serous meningitis trephining may bring about a complete cure. A. LEVY.

(4) **Cabannes** records the case of a patient, aged 53, with good family and personal history, who suffered for six years from Jacksonian epilepsy, and whose vision had been failing for two years and was so reduced that he could only count fingers at 1·5 metres and was unable to recognise colours. There was typical post-neuritic optic atrophy. The skull was trephined over the right Rolandic area and a piece of an extensive tumour of the pia mater was removed, which proved on microscopic examination to be a psammoma. The operation was followed by left hemiplegia, which gradually passed off, and about six weeks after its performance, the patient was able to count fingers at 4·5 metres and to read the headings of newspapers, while he had recovered the power of distinguishing all colours except green. Cabannes discusses the pathology and treatment of choked disc, urging early decompression by trephining. R. J. COULTER.

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## OPHTHALMOLOGICAL INSTRUMENTS.

MADE BY

E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK.

- (1) Phorometer, by Dr. Wells, Boston.
- (2) Landolt's Test Types.
- (3) Derby's Simplified Stereoscope.
- (4) Savage's Monocular Phorometer.
- (5) Registering Perimeter.

The above instruments are briefly described below—further information will be gladly given upon application, or, by arrangement, they can be obtained upon trial.

(1) Phorometer, by Dr. Wells. This little instrument consists of a  $10^\circ$  prism mounted in a frame, having attached to it a weighted disc which indicates the level position, on the principle of a plumb-bob. When the instrument is held so that the base of the prism is exactly vertical, the index on the disc points to the zero at the lower edge of the instrument; when the base is horizontal, the index points to zero at the side. These two positions enable one to examine for both ex and es-ophoria and hyperphoria.

In testing for ex or es-ophoria, the disc is at one side of the prism; for hyperphoria above. When the prism is exactly vertical or horizontal, the index points to zero. If the images are out of alignment, the prism is turned until alignment is secured, when the index shows the phoria in prism dioptries.

It does roughly the work of a Stevens Phorometer, up to  $9^\circ$  and it is possible to determine the phoria very closely in half a minute. It is a great time saver in roughing out a case and also very convenient for use away from the office and in the dispensary clinic, where it is impossible to take time for elaborate heterophoria tests.

The instrument measures  $3 \times 1\frac{3}{4} \times \frac{1}{4}$  inches thick and weighs but a few ounces.

(2) Landolt's Test Types.—These test-types consist of a white ground with black rings, out of which a piece with parallel edges has been removed. The subject under test is then required to indicate by word or motion of hand the place where the circle is broken. The diameter of the opening corresponds to the tangent of the angle of vision. The dimensions are selected in such a manner, that when placed at a distance of 5 meters, and properly illuminated, the reading of the openings correspond to 15 degrees of vision.

Normal vision corresponds as heretofore, to an angle of 1 minute.

These test-types, therefore, have the advantage that they cannot be easily memorized, and can be used for intelligent, as well as illiterate patients of all languages, and thus furnish a real fundamental unit for all tests.

(3) Derby's Simplified Stereoscope.—This stereoscope was designed to enable the patient to promptly secure a displacement of the half-pictures in both the lateral and vertical sense.

The background for the half-pictures is a white surface, on which horizontal and vertical lines are engraved; in each case at a distance of one centimetre apart. These vertical lines are numbered right and left from the middle of the card. Experience has shown that the measure of displacement of the half-pictures one square on the card, or a centimetre is a prism of  $3^\circ$ .

Directly in front of this white background, which thus serves for an exact location of the two half-pictures, two small travelers move. Each of these,

like the half of an ordinary trial frame, is semi-circular and is graduated from  $0^{\circ}$  to  $180^{\circ}$ . In this traveler the stereoscopic half-picture is placed and the vertical axis of the picture for ordinary muscular anomaly is placed at  $90^{\circ}$ . By a simple screw adjustment, the two images may be moved in either a lateral or vertical direction. The two pictures may be rotated in their holders, and their position carefully determined by the graduated scale to meet their oblique positions of the meridians. Two clips in front of these holders serve to receive the ordinary stereoscopic card. The stereoscope is mounted on a firm base, and it as well as the object card, can be inclined to any required angle by a movable joint, and the whole thing can be elevated at will. This distance between stereoscope and object card can be increased or diminished by a simple mechanism between 12 and 16 cm., the normal distance being 13 cm., the focal length of the convex prisms. These lenses are convex 7 D., combined with prisms  $5^{\circ}$  bases out. To meet varying pupillary distances, these lenses may be displaced laterally by means of a simple screw adjustment set in the framework of the stereoscope.

(4) **Savage's Monocular Phorometer.** This instrument is designed for the determination and measurement of insufficiencies of the various ocular muscles, and is based on the principle that the image in one eye throughout every test shall be undisturbed.

It consists principally of a rotary variable prism correctly marked in degrees and lettered to show the various conditions of muscular imbalance, such as exophoria, esophoria, hyperphoria, etc., etc. On each side of the rotary prism are cells, in one of which toward the patient's face, is to be placed the displacing prism for causing diplopia. These prisms are carefully mounted in square cells for securing accurate position at either  $90^{\circ}$  or  $180^{\circ}$ . The instrument is furnished with a spirit level and a levelling screw.

(5) **Registering Perimeter.** This instrument combines the most practical points of the Landolt and Priestley-Smith perimeters but is less expensive. It is light and well balanced and has the broad metal arc, with the sliding object carrier of the Landolt and the registering attachment of the Priestley-Smith. It has a reversible chin rest, sliding upon the upright bar, the end of which carries a rubber plate and determines the point of fixation.

The chart is fitted to a hard rubber disc at the back of the instrument and is revolved with the arc. A stationary scale, mounted upon an upright arm, is graduated to correspond to the divisions of the arc, and is placed immediately behind the disc holding the chart. By means of this combination the exact position of the object point upon the arc and the meridian of the arc itself may be pricked upon the chart.

To avoid the necessity of orientation in the mind of the position of the slide the graduations are made on the broad arc in two distinct colors, the degrees on one arm of the arc being red and on the other white. The stationary registering scale is divided and colored in the same manner, so that it requires only a simple observance of the color in pricking the chart. As the chart rotates simultaneously with the arc, all possible error from lost motion and liability to get out of order through complicated gearing is obviated. A further improvement is a cylindrical opening through the conical spindle, which enables the operator to observe the eye of the patient.

The color discs show white, red, blue, green and yellow in squares of 5 millimetres, and one white of 10 millimetres, and are carried on a handle 45 centimetres long.

The "Meyrowitz Bulletin" can be obtained upon application to E. B. Meyrowitz, 1a, Old Bond Street, London.

## XII.—OPHTHALMIA NEONATORUM.

Dufour, Auguste.—The prophylaxis of ophthalmia neonatorum.  
(La prophylaxie de l'ophtalmie des nouveau nés.) *Rev. Méd. de la Suisse Romande*, 20 octobre, 1909.

Auguste Dufour, of Lausanne, made a communication concerning the prevention of ophthalmia neonatorum at a recent meeting of the Medical Society of the Canton of Vaud, Switzerland.

In Switzerland the disease in question attacks some five children out of every thousand born, or, in other words, about 400 children annually, and of this number 64 suffer more or less damage to sight. During the last few years it has tended to increase. This is shown by the figures of two blind asylums in Canton Vaud dealing with six decennial periods from 1844 to 1904; *viz.*, 41, 33, 36, 19, 7, and 30 per cent. of the total number of the inmates. Moreover, the statistics of the Lausanne Ophthalmic Hospital show that the frequency of gonococcal affections of the eye has increased during the last ten years.

As regards the bacteriology of ophthalmia neonatorum, 63 per cent. of the cases, on the average, are due to the gonococcus, 7 per cent. to the bacterium coli, while in 30 per cent. there are either no micro-organisms or such microbes as the pneumococcus, the staphylococcus, the streptococcus, the Klebs-Löffler bacillus, the Koch-Weeks' bacillus, the diplobacillus, sarcina, or the bacillus pyocyaneus.

Many of the Swiss cantons have no regulations for dealing with infantile ophthalmia. In 1886 the authorities of Canton Vaud issued instructions directing midwives to summon medical help immediately in cases of inflammation or suppuration of the genital tract in the mother or of discharge from the baby's eyes. Unfortunately, these regulations appear to have been more honoured in the breach than the observance. Sometimes nobody, not even the medical man concerned in the labour, takes the trouble to look at the infant's eyes during the first few days, so that the disease passes without notice. Dufour tells of a case where a baby born of a primiparous mother, who had been affected with an abundant leucorrhœa during pregnancy, developed a little running from the eyes a few days after birth. Three weeks later a medical man was summoned by the mother on her own account, but she did not call his attention to the child. Five weeks after birth, when the infant was brought to Dufour, *phthisis bulbi* and complete blindness were present. According to Heim—a well known writer on ophthalmia in Switzerland—in 29·3 per cent. of the cases of ophthalmia the child is not brought to the doctor by the midwife until after the fifth day of the disease. Under such circumstances the midwife should not be threatened but be punished for her neglect.

In 1837 Dr. Convers, of Vevey, published a leaflet pointing out to parents the dangers of ophthalmia neonatorum. In 1883 the Medical Society of the Canton of Vaud distributed a *Feuille d'Hygiène*, drawn up by Dr. Marc Dufour. But the issue of this document has ceased for at least twenty years. Little better fortune has attended the official *Livret de Famille*, which contains instructions about the rearing of young children, since it is no longer distributed, and, indeed, was never distributed in certain of the larger communes. The book is not obligatory, and it costs three francs.

The Central Swiss Union for the Welfare of the Blind adopted in 1905 and again in 1907 the conclusions of a Report drawn up at their instance by Dr. Haltenhoff, of Geneva. A committee of ophthalmic surgeons (Haltenhoff,

Vetsch, and A. Dufour) has drafted instructions for midwives, and the authorities have promised that these shall be included in the Federal Regulations whereby it is intended to unify for the whole of Switzerland the conditions imposed upon midwives.

Dufour is persuaded of the efficacy of Credé's method of preventing ophthalmia neonatorum. He advises that the pupils in maternity hospitals should be taught how to apply the drops to the baby's eyes. He believes that in maternities, where a large proportion of the women are affected with gonorrhœa, the silver solution should be used to the eyes of every newly-born child, whether threatened or not. Rossier at the Lausanne Maternity Charity, using 1 per cent. solution of silver nitrate, reduced the cases of ophthalmia neonatorum from about 11 per cent. in 1885 to 0·39 per cent. in 1906. At the present moment, however, sophol is being tried in that institution. Dufour is of opinion that midwives should be provided with the 1 per cent. solution of silver nitrate, and that steps should be taken to ensure that the supply be kept up. The liquid should be dropped into the eyes only of presumably infected infants—that is to say, if the mother shows vaginal discharge or presents any sign whatever of inflammation of the genito-urinary tract. The application should be made immediately after the first bath and never later.

In every Canton, save three, the midwife is prohibited from making any preventive application to the baby's eyes. Fribourg, Zurich, and Berne are the exceptions. In the former two a 1 per cent. silver and in the latter a 5 per cent. protargol solution is to be employed in suspicious cases if the parents refuse to summon a medical man, or if the doctor has not arrived on completion of the labour.

Dufour submitted the following propositions to the vote of the Society :—

1. To remind midwives of their obligation and moral duty to summon medical help immediately in case of inflammation or suppuration of the genital parts, or of inflammation of the baby's eyes.
2. To study the question of introducing into the midwives' regulations the rules proposed in 1908 by the medical committee, nominated by the Central Swiss Union for the Welfare of the Blind.
3. To consider the advisability of giving gratuitously to parents registering the birth of an infant proper printed instructions, dealing with the dangers of ophthalmia neonatorum.

The foregoing resolutions were unanimously adopted by the Medical Society of the Canton of Vaud.

SYDNEY STEPHENSON.

### XIII.—THE EFFECT OF ACIDS AND CAUSTICS ON THE CORNEA.

**Guillery.**—Chemical and clinical studies on the effect of acids and caustics on the cornea. (*Chemisches und Klinisches Studien über Hornhautätzung.*) *Arch. f. Augenheilk.*, Bd. LXX., Januar, 1910, S. 139-169. Illust.

**Guillery** (Cologne) publishes the results of a further series of experiments on the action of acids on the cornea. In a previous paper he showed that a basic substance, such as lime, formed a compound with the organic constituents of the cornea and thus produced an opacity which became permanent unless



dissolved with chemical solvents. An acid also produced an opacity at first, but this opacity cleared up in the centre, leaving an opaque ring which was soluble in suitable solvents. The primary opacity produced by lime became intensified by secondary inflammatory deposits, which disappeared when the inflammation subsided. Similar inflammatory changes occurred also in the case of acids, but the cornea either remained clear, or a secondary opacity appeared in the course of an hour which rapidly became more dense. The latter did not seem to be due to any precipitate nor was it of an inflammatory nature.—The present experiments show that the peculiar effect of acids on the cornea is due to a compound formed by the acid with the mucoid substance of the cornea, which is soluble in excess of the acid. This opacity is also cleared up by potassium hydrate, which forms a most suitable remedy in acid burns. Another opacity, however, often appears and is caused by the destructive effect which the acid has on the epithelium of Descemet's membrane, resulting in œdema of the corneal tissues.—The effect of lime differs in some respects from that of acids, but it also forms a precipitate with the mucoid substance of the cornea, a precipitate which is best dissolved in a 10 per cent. solution of ammonium chloride, to which a few drops of a 0.1 per cent. solution of tartaric acid have been added. P. J. HAY.

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#### XIV.—EXPERIMENTAL FISTULISATION OF THE ANTERIOR CHAMBER.

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Weekers, L., and Heuvelmans, C.—The experimental formation of a fistula of the anterior chamber by means of sclerectomy. (*Fistulisation expérimentale de la chambre antérieure par la sclérectomie.*) *Archives d'Ophthalmologie*, novembre, 1909.

At the present moment considerable importance attaches to anatomical work which tells either in favour of or against Lagrange's contention, namely, that a fistula of the anterior chamber of the eye can be established by his operation of irido-sclerectomy (*See THE OPHTHALMOSCOPE*, September, 1907.)

Weekers and Heuvelmans, of Liège, in the present communication show that this end can be attained. The authors performed Lagrange's irido-sclerectomy on the eye of a rabbit, a strip of sclera, about 1 mm. by 1.5 mm., being excised and the eye being occluded for twenty-four hours by means of sutures passed through the eyelids. The anterior chamber was re-formed the day after operation, and, after the fifth day, œdema was limited to the site of the sclerectomy, where the conjunctiva was slightly elevated and presented darkish pigment spots. The eye was enucleated five months after operation. Anatomical examination showed the existence of a true *fistulette* of the anterior chamber. At the corneal limbus, where the excision had been made, there was a solution of continuity in the sclera—a small canal, as it were, in direct communication with the anterior chamber. This canaliculus, dilated towards its conjunctival extremity, entered directly into a small cavity, or ampulla, situated in the subconjunctival tissue. The intra-scleral course of the fistula was clearly limited by the scleral tissue, lined by a delicate layer of fibrin, in which a few blood corpuscles and some pigment particles could be recognised. Across the

canal several fibrinous bands stretched, but without obstructing its lumen. The cavity of the ampulla in the subconjunctival tissue, also, was lined with a layer of fibrin, which contained small masses of pigment. The canal was somewhat contracted, where it joined the anterior chamber, by the remains of iris tissue. The subconjunctival tissue was occupied by large vacuoles, having the structure of capillaries. The ciliary body and the crystalline lens showed no changes. That a current of aqueous humour had passed through the fistula was proved by the presence of particles of pigment (derived from the iris) deposited not only in the walls of the canal, but also in the subconjunctival ampulla and the parts immediately around the latter. In other words, the pigment had become entangled in the meshes of the subconjunctival lymphatic system, where they were subsequently found upon histological examination. The authors claim that this experiment proves that elimination of the aqueous humour into the subconjunctival tissues may be produced by sclerectomy, as held by Lagrange.

In addition to the experiment described above, Weekers and Heuvelmans subjected the eyes of eleven rabbits to sclerectomy, and then examined the eyes microscopically. In some of the animals a modified sclerectomy, which the authors consider as simpler than that of Lagrange, was performed. A flap of conjunctiva is raised from above the cornea, and its base—i.e., its attachment to the limbus—is carefully dissected almost up to the cornea. The point of a cataract knife is then pushed obliquely into the anterior chamber at a distance of about 1 mm from the limbus. As soon as the point is recognised in the chamber, the blade is displaced to one side, which can usually be done without the aqueous escaping. The small scleral flap thus prepared is excised, and the conjunctiva brought over the wound. In the authors' hands, simple sclerectomy without iridectomy did not invariably yield a fistula such as they wished to procure.

The following conclusions are drawn by Weekers and Heuvelmans from their experimental work as outlined above: (1) The whole thickness of the sclera must be excised if a permanent fistula is to be obtained. (2) For several reasons, the excision must be made as close to the cornea as possible. When the sclerectomy is made too far from the limbus, the loss of substance in the sclera may be obstructed by the ciliary body, which may even prolapse if much sclera has been removed. (3) Sclerectomy practised without iridectomy exposes the eye to the risk of entanglement or of prolapse of the iris in the scleral wound.\*

SYDNEY STEPHENSON.

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## XV.—PARINAUD'S CONJUNCTIVITIS.

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- (1) Scalinci, Noé.—Parinaud's conjunctivitis. (*Sulla congiuntivite di Parinaud.*) *La Clinica Oculistica*, Oct-Nov., 1909.
- (2) Parisotti.—Parinaud's conjunctivitis. (*Congiuntivite del Parinaud.*) *Rivista Italiana di Ottalmologia*, December, 1909.

(1) In this paper Scalinci (Naples) points out how much the ideas of this form of conjunctivitis have changed since it was first described by

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\*Weekers has twice tried to perform sclerectomy in cases of absolute glaucoma in man, but without success. The conjunctiva was so closely adherent to the sclera at the limbus that it was found to be impossible to resect the sclera without at the same time tearing the conjunctiva. He believes that this condition will often interfere with the performance of Lagrange's operation in cases of ancient glaucoma. He recalls the familiar fact that such a morbid adhesion between conjunctiva and sclera at the limbus is frequently found during the excision of eyes lost from absolute glaucoma.—S.S.

Parinaud in 1889. It would seem from the numerous reports of this disorder that have gradually accumulated, that it may be the result of several different infective processes, and that it cannot be sustained to be universally derived from infection from animals.

Scalinci contributes an observation of his own :

The patient, a child of six years, came under his care on the 30th December, 1908, the ocular affection having then existed for about three weeks. Since the preceding August there had been no possibility of infection from animals, as far as could be discovered. During the previous days there seemed to have been no pain in the eye, nor had there been any disturbance of the general health. On the occasion of the first visit, the left upper lid was notably swollen and reddened, and the marginal skin was the seat of a linear ulcer. The lower lid was slightly œdematous. When drawn away from the globe, it could be seen that the tarsal conjunctiva was very hyperæmic, and, on the temporal side, was covered with small round granulations, which extended over the tarsus into the *cul-de-sac*. The upper lid could not be everted on account of the thickening, but when raised, the conjunctiva of the eye was seen to be for the most part normal, with the exception of an area in the upper and outer quadrant, where there appeared to be a limited zone of inflammation and chemosis. The finger felt a marked subcutaneous thickening of the lid tissues. The cornea showed no sign of any affection. The glands in front of and behind the ear and below the maxilla were enlarged but not tender and the skin over them was healthy. There was free muco-purulent discharge. Under treatment by *lavage* with 1 in 6,000 sublimate solution, and protargol 4 per cent. as drops, the lids improved, and in a short time it was possible to examine the under surface of the upper lid. It was then found that there were great alterations of the temporal part, while the nasal side was little changed; on this latter side there were a few small nodules with a yellowish apex, but on the temporal half there was extreme hyperplasia of the papillæ with a few nodules. The discharge ceased. About the middle of February the preauricular gland became fluctuating and it was incised with all aseptic precautions, the pus being used for cultivation. In the early part of March a strip of conjunctiva was excised from the mid region of the upper lid; the deeper tissues were removed to some extent therewith. This fragment was used for histological research. The child was lost to sight before the cure was complete.

Examination of the excised flap showed that the thickening of the lid was due in great part to the involvement of the Meibomian glands; these were very much altered in character, so that the true nature was only to be seen by comparing the less affected areas with the parts of greater change. There was much infiltration round the acini. The conjunctiva was the seat of many papillary vegetations, which, Scalinci thinks, were probably secondary to the gross disease of the tarsus, and especially of the Meibomian glands.

Bacteriological examination of the pus from the abscess and of the secretion from the small nodules, showed streptococci and staphylococci pyogenes aureus. There was no examination of the pus made in the early stages of the disease.

The chief feature to which Scalinci draws attention is the enormous thickening of the tarsal plate. This is not a usual feature of the disease; indeed, Bernheimer, in a paper on the subject, called attention to the supposed fact that the tarsus was never involved. The present case shows that this statement was too sweeping.

Scalinci is of opinion that a number of different causes may give rise to the same syndrome of symptoms; that, therefore, Parinaud's conjunctivitis is a name rather for a group of symptoms than for a special disease.

HAROLD GRIMSDALE.

(2) **Parisotti** (Rome) is of opinion that the disease is a true single disorder and not merely the name for a group of symptoms which may be caused by several conditions. He thinks that Parinaud was correct in the chief points, although in the question of ætiology, he erred, an error which he would have set right with greater knowledge of the disease. It is therefore, desirable to drop the name of "conjunctivitis from animals" (*congiuntivite animale*) and to use the term "Parinaud's conjunctivitis," a term which advances no theory as to causation, but serves to keep in our minds the surgeon to whose clinical acumen we owe the recognition of the syndrome. Parisotti has recently observed two cases, which are of unusual interest, if only for the fact that they occurred in two distinguished surgeons who give their history largely by their own mouths.

The first case, that of Professor Manara, ran its course without any very unusual deviation from the normal; the second, that of Dr. Feliciani, was abnormal in several respects, and especially in its length, extending over ten or eleven months. In the latter case, the cornea was affected—an unusual complication—and therefore there was photophobia and lachrymation.

Usually, the symptoms of the disease are such that in the early stages it is indistinguishable from catarrhal conjunctivitis; later, the swelling of the preauricular gland, and the irregularity of the temperature, point out that there is a more serious disturbance of the bodily health. The gland does not always suppurate, although this was regarded by Parinaud as a crucial symptom.

There can be no doubt that the ætiology ascribed by Parinaud is incorrect. In the case of Professor Manara, the disease followed the accidental inoculation of the eye by means of a spurt of matter from uterine cancer. A similar cause is possible, but most uncertain, in the second case.

It has been maintained by Goldzieher that the conjunctival vegetations are the chief part of the disease and that all the other symptoms are secondary to them, but Parisotti points out that these vegetations are not always present until the stage of regression has set in.

Parisotti thinks that the clinical facts point to a penetrating infection by a micro-organism which proliferates rapidly but has a very short individual existence; the organism is stopped by the nearest lymphatic gland. It is a noteworthy point that the second eye is very rarely, if ever, infected.

Confusion between this form of conjunctivitis and that due to tuberculosis is easy, both to macroscopic examination and to a superficial histological research. It is true that no caseation has been observed in the nodules taken from Parinaud's disease, but they are constantly the seat of other forms of degeneration and even of necrosis. The constant escape of the cornea is a point in Parinaud's disease. Further, diagnosis between the disease and trachoma is very difficult in the early stages, when the vegetations are small and look like hypertrophied papillæ. In Parinaud's disease, however, the vegetations are lardaceous-looking, and between them there is constantly ulceration, which is never seen in trachoma. But even in the early stages the glandular swelling and the constitutional disturbance will help.

Parisotti regards the most important point in the treatment of the disease to be avoidance of damage to the conjunctiva. To this end all powerful drugs must be put on one side and the eye kept bathed with some very mild lotion, while the vegetations should on no account be excised. Removal was followed in the case of Feliciani by an immediate recrudescence of the disease, and by a renewal of the glandular abscesses. HAROLD GRIMSDALE.

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## XVI.—ATROPINE INTOXICATION.

Elsner, H.—Clinical and experimental researches upon the causes of toxic symptoms after the use of atropine in children suffering from affections of the eye. (Klinische und experimentelle Untersuchungen über die Ursachen von Intoxikationserscheinungen nach Atropin anwendung bei augenkranken Kindern.) *Zeitschrift für Augenheilkunde*, November and Dezember, 1909.

The work of **Elsner**, of Bâsle, sheds light upon those annoying, if harmless, instances of atropine intoxication, which, although apparently infrequent in the Bâsle clinic, are only too common with us. The conclusion he arrives at, after adducing evidence which would appear to be absolutely conclusive, is that the poisonous effect is due to impurities, chiefly hyocyamine, in the atropine, and not to the alkaloid itself.

At Bâsle, during the last twenty years, cases of atropine poisoning have been of the rarest occurrence (*Zur grôsten Seltenheit gehôrt*), and even those which were recorded followed large doses, and were very mild in character. Recently, however, the fact became clear that even small doses gave rise to very severe poisonous effects.

The first case was one of congenital cataract in a child. One drop of a half per cent. solution was instilled into the conjunctival sac preparatory to discission. In from 10-15 minutes the child showed the following symptoms: a rapid pulse, which developed almost suddenly, rising to 150-160 beats a minute. Alteration in the character of the breathing. Rise of temperature to 99·2° F. Redness of the face was very obvious, but there was no alteration in the child's mental condition. At first it was thought that the child had a special idiosyncrasy with regard to atropine. But another case soon occurred. It was then remembered that atropine poisoning had been noticed in another eye clinic, and eumydrine was substituted as the ordinary mydriatic instead of atropine.

The stock of atropine was now investigated, and two qualities were found. One carried the label *Atropinum sulphuric alb. crystal naturale*, and the other *Atropinum sulphuric alb. puriss. crystal Ph.* The second was prepared according to the formula of the Swiss Pharmacopœia. The *natural* crystals passed all the tests demanded by the Pharmacopœia except the ammonia test and the gold chloride reaction. The Pharmacopœia demands that "The solution of atropine sulphate (1-60) shall become cloudy upon the addition of a solution of sodium hydrate, but not on the addition of ammonia. If the ammonia gives a precipitate, the atropine is contaminated with belladonin and other alien bases." The solution of the natural crystals became cloudy when ammonia was added. The Pharmacopœia atropine only showed a slight opalescence. The Pharmacopœia further demands that if one saturates a solution (1-50) acidulated with hydrochloric acid with gold chloride no crystals, or only infrequent ones, shall be precipitated. The solution of impure atropine deposited on cooling a copious golden-yellow precipitate which after 24 hours yielded beautiful crystals. A further analysis showed that this impure atropine consisted in great part of hyoscyamin sulphate.

It would appear, then, that the so-called *natural atropine* always contained hyoscyamine.

After deciding that the chief difference between the two specimens of atropine lay in the contamination of the natural atropine with hyoscyamine,

the author made a series of experiments upon the patients in the hospital. A  $\frac{1}{2}$  per cent. solution of the two atropines was instilled into the eyes in the usual manner. Toxic symptoms appeared in children after six to eight drops had been administered. In three cases one drop was instilled three times a day, and in two two drops twice a day. The result was the same. The symptoms noticed were those already recorded: rise of temperature, increased pulse frequency, somnolence, and grinding of the teeth. A periodic exacerbation and amelioration of the toxic symptoms was not detected. Experiments with the pure atropine resulted in one child showing very mild symptoms.

Experiments made upon cats gave similar results. Young kittens were affected by the impure drops, whereas the pure atropine had little or no toxic action. Double the dose and double the time were necessary to elicit toxic symptoms of a mild type.

Specimens of atropine from different sources were tested upon cats and upon patients; some were impure and caused poisonous symptoms, others were pure and did not.

Pure *hyoscyamine* was not used upon children, as it was regarded as unsafe, but when instilled into the eyes of kittens, it gave rise to symptoms similar to those caused by the natural atropine.

The second article deals with the chemical and physical properties of the two alkaloids, the methods of preparation, and gives analyses of different samples of atropine.

Finally, the different results obtained by injecting atropine medicinally are narrated and referred to the admixture with *hyoscyamine*. It would appear that a combination of the two tropines is more poisonous than either alone.

The young plant of *Atropa Belladonna* contains very little atropine and much *hyoscyamine*: as it grows older, the proportion of atropine increases. In the process of manufacture the resultant purified atropine, which contains some *hyoscyamine*, is treated with alkaline carbonates, which by catalytic action convert much of the *hyoscyamine* into the isomer atropine.

A solution of atropine should be optically inactive or slightly lævo-rotatory, but *hyoscyamine* solutions rotate the plane of polarization to the left strongly. A synthetic *hyoscyamine* has been produced which is dextro-rotatory. The paper gives details of the melting points of samples of atropine.

In conclusion, we gather from the paper that toxic symptoms from the use of atropine drops are very rare, indeed, almost unknown, in Germany and Switzerland; the author does not say so, but it can be inferred from his remarks. We further learn that when they do appear they are caused by the presence of *hyoscyamine* in the atropine.

We know that the mild toxic symptoms are exceedingly common in England—in fact, they are the rule in young infants if drops be ordered rather than ointment. In our own practice, although we use atropine obtained from the best wholesale house in London, and never order drops to young infants, they occur at least once a month among the older children. The logical inference is either that Elsnér's views are incorrect, or that the German atropine is much purer than our own. The preparation we use is certified to be optically inactive and to contain no *hyoscyamine*, and yet it frequently causes toxic symptoms, such as slight delirium at night. This being the case, these poisonous manifestations cannot be referred wholly to *hyoscyamine*.

T. HARRISON BUTLER.

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## XVII.—JUVENILE TABES DORSALIS.

Apert, Lévy-Froenkel, and Ménard.—Juvenile tabes and general paralysis due to acquired syphilis; tabes of the mother; tabes and general paralysis of the father. (Tabes et paralysie générale juvéniles par syphilis acquise; tabes de la mère; tabes et paralysie générale du père.) *Annales de Médecine et Chirurgie Infantiles*, 15 janvier, 1908.

Apert, Lévy-Froenkel, and Ménard relate in much detail the clinical and family history of a girl of 15 who, born healthy of healthy parents, became syphilitic through sleeping with her parents, who had both contracted syphilis (through the father) when she was two-and-a-half years old. The father died, twelve years after contracting the disease, of tabes and general paralysis; the mother was still alive, though also tabetic. With regard to the history of the child, the following is a summary.—Syphilis was acquired at two-and-a-half years; twelve years later epileptiform crises suddenly appeared and were followed by coma. When she became conscious, numerous well-marked indications of tabes (Argyll Robertson pupils and irido-choroiditis among the rest) seemed to indicate that the latter had already existed for some time. At the same time there were certain changes in character and eccentricities, especially a constant desire to escape from the hospital, followed by violent rages when she was prevented from doing so, which, added to the epileptic and comatose condition, made one think of the addition of general paralysis to the tabes. It is true there is no physical sign of general paralysis, such especially as tremulousness, speech troubles, difficulty in reading or writing, but the failure of specific treatment seems rather to indicate general paralysis (quaternary syphilis) than cerebral syphilis, properly so called (tertiary syphilis). ERNEST THOMSON.

## XVIII.—THE RUDIMENTARY STIGMATA OF HEREDITARY SYPHILIS.

Gonzalez, José de Jesus.—Frequency of Hereditary Ocular Syphilis and a Study of its Rudimentary Stigmata. Special Report at the third Annual Meeting of the Mexican Ophthalmological Society, and *Anales de Oftalmologia*, March, 1908.

Gonzalez (Mexico) studies the following: 1. Frequency of ocular hereditary syphilis: (a) in relation to the total number of eye diseases; (b) in 50 children of well-proven syphilitic parents. II. Rudimentary stigmata of ocular inherited syphilis.

1.—Frequency of Ocular Syphilis.—(a) Among 3,000 eye patients, he found 68 cases of ocular inherited syphilis, classified as follows: interstitial keratitis, 42; ulcerous keratitis, 11; kerato-malacia, 1; iritis, 2; choroiditis, disseminated, 1; retino-choroiditis, 1; pigmentary retinitis, 1; cataracts, posterior polar, 1, and zonular, 1; iris coloboma, 1; microphthalmia, 1; buphthalmia, 1; strabismus, 2, and ptosis, 1.

(b) In order to find out the real frequency of ocular inherited syphilis in children of syphilitic parents, the author studied 50 children of well-proven syphilitics, examining them minutely from an ocular point of view, and he found that 36 per cent. of these children suffered from eye changes. The proportion of ocular inherited syphilis was not the same in all the families

observed, which were 15 in number. The circumstances which cause a variation in the frequency of the inheritance are three: 1st, the duration of the parental syphilis at the time of marriage: the nearer the marriage takes place to the primitive accident, the chancre, the greater are the probabilities that the children will suffer from inherited syphilis; hence the first children may suffer from syphilis, whilst the last, born when the parental infection is old, are found to be healthy; 2nd, the virulence of paternal syphilis; and 3rd, the constancy with which the specific treatment has been followed by the progenitors. The foregoing shows where the real prophylaxis of ocular inherited syphilis rests: prevent the marriage of syphilitic persons near the time of the chancre, and, when this is not feasible, subject the married couple to a mixed treatment, well carried out. The author deduces from his observations that interstitial keratitis is a direct accident of syphilis and is not of a dystrophic origin; for, in the first place, the greater number of cases is observed in children born in the active epoch, and, secondly, specific treatment is efficacious. The frequency of corneal manifestations and the rarity of inherited syphilitic localizations in other parts of the eye are worthy of note. Antonelli affirms that among young persons with inherited syphilis, one-half have strabismus: the author, among 50 children of syphilitic parents has found 5 with strabismus, that is, 10 per cent., but referring only to 18 with inherited syphilis, the proportion with strabismus is 27.7 per cent.

#### 11.—Ophthalmoscopic Rudimentary Stigmata of Inherited Syphilis.

Gonzalez thinks that this name should be reserved for the traces left in the *fundus of the eyes by infirmities which completed their evolution during fetal life and which, in adults, are compatible with the functional integrity of the organ.*

The stigmata which the author found are: 1st.—Peri-vascular lines or the arteries transformed into white strings, changes which, of themselves, suffice, in persons who have not suffered from the eyes, to make one suspect hereditary syphilis. 2nd.—Collections of pigment surrounding the branches of the central artery of the retina. 3rd.—Atrophic whitish patches of disseminated choroiditis near the vessels. (These latter two stigmata indicate the subordination of lesions of the fundus oculi to the vascular changes.) 4th.—A peripapillary pigmentary frame. Antonelli, who has described this stigma, grants it a great diagnostic value. In order to judge its value, the author has made a comparative study of 50 children of syphilitic parents, and 50 children of non-syphilitic. Among the children of syphilitics 74% presented peripapillary pigmentation, and among those who suffered from other inherited syphilitic manifestations *ail*, except one, had Antonelli's sign. Of the 50 children of non-syphilitic persons 34% presented a certain peripapillary pigmentation, but of a very mild tone, limited to a lateral sector and extended in a very narrow zone, sometimes even lineal. An abundant and very black peripapillary pigmentation therefore constitutes a mark of inherited syphilis.

Of the 50 children of syphilitic persons, 9 were ametropic, and of the 50 children of non-syphilitic persons, 9 were ametropic: inherited syphilis has accordingly no influence on the production of ametropia.

J. DE J. GONZALEZ.



## XIX—APPLIANCES.

- (1) W. Koster, Gzn.—An apparatus for measuring light and colour-sense. (Een licht-en kleurzin-meter.) *Ned. Tijdschrift voor Geneeskunde*, 1907, No. 17.
- (2) W. Koster, Gzn.—A method to prevent the disturbing influence of the electric tram on the sideroscope. (Over het tegengaan der storende werking van de elektrische tram op de sideroscope.) *Ned. Tijdschrift v. Geneeskunde*, 1908, I.
- (3) Berger, E.—On the use of the Stereoscope in the examination of central visual acuity. (De l'emploi du Stéréoscope pour l'examen de l'acuité visuelle centrale.) *Revue Générale d'Ophthalmologie*, 30 novembre, 1908.
- (4) Leplat.—An instrument for measuring the inter-pupillary distance. (Mensureur de l'écart pupillaire.) *L'Ophthalmologie Provinciale*, décembre, 1908.
- (5) Oppenheimer, E. H.—Sundry optical novelties. (Allerhand Optisches.) *Wochenschrift für Therapie und Hygiene des Auges*, Januar 14, 1909.
- (6) Knisius, F.—An isochromatic pupilometer for use by reflected and transmitted light. (Isochrome-Pupillenskala zur Messung in auf- und durch-fallendem Lichte.) *Zeitschrift für Augenheilkunde*, March, 1909.
- (7) Lotz, A.—Apparatus for stereoscopic eye muscle exercises. *Wochenschrift für Therapie und Hygiene des Auges*, Juli 15, 1909.
- (8) Meyer, H.—Apparatus for rapid vision-testing. *Wochenschrift für Therapie und Hygiene des Auges*, Juli 29, 1909.
- (9) Oppenheimer, E.—A modification of Roth's vision-testing apparatus. *Wochenschrift für Therapie und Hygiene des Auges*, August 5, 1909.
- (10) Lewis, G. Griffin.—A new eye irrigator. *Journal Ophthalmology and Oto-Laryngology*. August, 1909.
- (11) Santa Maria, Albert.—A new apparatus for the detection of simulated monocular amblyopia and amaurosis. *La Clinique Ophthalmologique*, 10 septembre, 1909.
- (12) Meyer, H.—Vision testing apparatus. (Sehproben Apparat.) *Wochenschrift für Therapie und Hygiene des Auges*, September 16, 1909.
- (13) Sweet, William.—Improved apparatus for localising foreign bodies in the eyeball by the Röntgen Rays. *Archives of Ophthalmology*, November, 1909, and *Trans. American Ophthalmological Society*, Vol. XII, Part I, 1909.
- (14) Edridge-Green, F. W.—A new colour-perception spectrometer. *British Medical Journal*, December 18, 1909.

(1) Koster has modified Forster's photoptometer. In the first place, the intensity of the illumination can be varied in Koster's instrument between greater limits by placing the candle in the centre of the instrument. A piece of oiled paper, illuminated from behind by the candle, serves as a source of

light, and can be covered or uncovered by a moveable screen to vary the intensity of the illumination. The patient has to look at a strip of white paper pasted on a black ground, and is asked to name the position of the strip, which can be turned in any direction. Moreover, coloured discs can be put in the instrument to estimate the intensity of illumination at which the patient begins to discern the various colours. A series of small optotypes serves to measure the visual acuity under various illuminations. By these additions Forster's optometer is made more useful for practical work. The instrument is used by Koster to detect beginning degeneration of the optic nerve, initial stages of choroido-retinitis, and for the differential diagnosis between glaucoma simplex and primary atrophy of the optic nerve. Deficiency of the colour perception in weak light, easily to be detected with the instrument, speaks in favour of disease of the nerve and against glaucoma simplex.

G. F. ROCHAT.

(2) If a sideroscope is placed in the neighbourhood of the electric current of the street cars, every variation in the strength of that current causes an excursion of the needle of the sideroscope. In places where many electric cars pass, the instrument is rendered practically useless. **Koster** describes a very simple and ingenious method to prevent the disturbing action of the electric tramway altogether. If there is no other influence working, the magnetism of the earth is the only power acting on the needle, and this forces the needle to take the position coinciding with the magnetic meridian. The current of the electric railway tries to bring the needle into another well-defined position, dependent upon the direction of the current. Now Koster makes the needle already take this position at rest, by placing another magnet under or near it. By this simple arrangement the current in the street is of influence no longer. The sensibility of the sideroscope is not impaired, if only one does not make the accessory magnet too strong.

(3) "The uni-ocular examination of the visual acuity of an eye, of which the vision is enfeebled, when carried out by means of a wall type, only indicates the visual acuity of the retinal region which has the best vision, without telling us if this part of the retina is identical with the centre of the retina." **Berger**, in order to overcome this difficulty, employs the fellow eye to maintain the defective eye in central vision. He has prepared stereoscopic cards presenting squares of definite sizes in such a manner that the image corresponding to the defective eye can be located, and the central acuity determined from the ability of the defective eye to see two squares of a determined size as separate from one another. This very ingenious device is, of course, useless where the affected eye deviates, and when there is a central scotoma.

ERNEST THOMSON.

(4) **Leplat's** instrument is intended to measure the interpupillary distance when the eyes are fixing an object 33 cm. from them, as in near work. It consists of a graduated bar with two pointers, one fixed opposite to zero on the scale and the other moveable, and a folding rod, 292 mm. in length, which can be fixed at right angles to it 45 mm. from the zero. The bar is placed against the brow of the patient and the end of the rod against that of the observer when allowing for the distance between the eyebrows the centres of rotation of the eyes of the patient and of the observer will be as nearly as possible 33 cm. from each other. The observer, then, using his left eye all the time and getting the patient to fix it first with one eye and then with the other brings the fixed and moveable pointers respectively in alignment with the centres the pupils of his right and left eyes, when the interpupillary distance for 33 cm. can be read off on the scale, which is corrected to allow for the distance between the bar and the patient's pupils. By means of a

second scale on the rod the corresponding interpupillary distance when the axes of the eyes are parallel can be ascertained without trouble.

The author gives the calculations on which the graduation of the scales is based and also for ascertaining the allowance to be made for the distance between the lenses and the pupils when centering reading glasses.

R. J. COULTER.

(5) A short discussion by **Oppenheimer** of various novelties including the *Omniskop*, *Seebachscroscope*, Periscope, and the platyscopic glasses of Mr. R. W. Doyne.

W. B. INGLIS POLLOCK.

(6) **Knisius** (Marburg).—The instrument consists of a plate of aluminium, perforated with circular holes, which range in size from 1 mm. to 8 mm. in diameter. The plate has a suitable handle at each end. Behind the holes there is a plate of red glass. There is another plate hinged behind the row of perforations which can hold either a black or a white plate. If the black surface be introduced and the posterior plate closed, we have an ordinary pupilometer for use when measuring the pupils by reflected light, a black pupil being matched with a black hole. To measure the illuminated pupil, the back is opened and the white plate inserted. This acts as a reflector, and so the red pupil can be matched with a red hole.

T. HARRISON BUTLER.

(7) **Lotz**, of Basle, has designed a metal arm to replace the wooden one usually employed on the common American stereoscope. By means of a continuous screw rotated from a handle at one end, the slots for the pictures can be approximated or separated gradually. Simple figures of which portions are present in only one of the pictures require both to be seen at once to complete the picture. Fusion may be established at any point, and the regular rotation of the screw avoids interrupted movements, and the ocular muscles are continuously exercised. When the two pictures are touching there is a distance of 3 cm. between fusion points, while separation to 14 cm. may be obtained. A scale in 0.5 cm. gives the distance at any position. The cheapness renders the apparatus suitable for patients. It can be obtained from Optiker Strubin and Sohn, Basle, for 7.50 marks.

W. B. INGLIS POLLOCK.

(8) **Meyer**, of Spandau, has constructed an elongated shallow black box in which is hung Snellen's or other test-type for visual acuity. Two square openings are placed at the middle with a small lamp between them, for illuminating the tests, and shaded from the eyes of the patient. A cover is provided for each opening but arranged so that while one is open the other is covered. The covers are controlled by a cord brought along the ceiling over pulleys and counterbalanced with a weight. There need only be two figures or letters on the test-types for each line, and these have to be spaced for one to each opening. The test-type can be raised or lowered by a second cord, so that different lines come behind the openings. Artificial light may be dispensed with when daylight is sufficient. The advantage of the apparatus lies in the time saved while a patient reads from  $\frac{6}{60}$  to  $\frac{6}{6}$  of the test-type, since smaller figures may be first exposed and larger ones quickly put in until one is read correctly. The first cord allows of uncovering the other opening and a second figure of the same size appears. The disadvantage lies in two letters instead of a whole line of type. The apparatus may be obtained from the Optischen Werkstatt Dörffel and Faerber, Berlin, N. 4. One would require several to give a different set of figures to each eye and a set of illiterate test-types. A description is also given of screw attachments to trial frames for fixing cylinders when testing astigmatism. It is made by Nitzsche and Günther, Optische Industrie-Anstalt in Rathenow.

W. B. INGLIS POLLOCK.

(9) The modification by **Oppenheimer** (of Berlin) of Roth's apparatus is



an improvement on Meyer's apparatus, in that an entire line of the test-type is exposed to view at the same time, instead of the two letters or figures of the latter. A black curtain with a rectangular opening can be raised or lowered in front of Roth's well-known mirror apparatus by means of a chain, which can be brought round pulleys to a convenient position. An electric or oil light provides illumination. Two lines of the test-type can be seen at one time. The rapid reading of six or seven letters of a line correctly is a better criterion of the correct lens than two letters. The exclusion of unnecessary lines conduces to a great saving of time. (The apparatus can be obtained from Optiker Sydow, Albrechtstrasse, Berlin.) W. B. INGLIS POLLOCK.

(10) This irrigator (made by F. A. Hardy & Co., Chicago) is recommended by **Lewis** for use in the treatment of purulent eye disease in infants and adults. It is easily introduced, much in the same way as is a speculum. The instrument is then raised, lifting the lids away from the ball, and the flushing is thorough. HENRY L. G. LEASK.

(11) **Santa Maria's** instrument is based in principle on the fact that when the simulator looks through the hypotenuse of a right-angled prism with his "good" eye, and through a plane glass with his "blind" eye, he gives himself away if he can read the distant test types, since the right-angle prism so placed is totally reflecting. The examinee can be led astray still further by the use of a duplicating prism before one eye and a plane glass before the other, of a duplicating prism before one eye, and a totally reflecting prism before the other, or of two duplicating prisms. The apparatus is so arranged that any of these combinations may be set from inside the stereoscope-like open-ended box without the examinee having his position disturbed, provided care is taken to prevent him getting his bearings by shutting one eye. The simulator is bound to lose his way amid the maze of images and optical illusions which can be produced by this simple instrument. ERNEST THOMSON.

(12) In a subsequent article **Meyer** writes that, in response to the criticism passed upon it, a test-type has been prepared showing two of the larger letters and three of the smaller in each opening of his apparatus. He believes that a single letter is not so easily remembered as a series which can be learned by rote; and states that the Naples International Congress recommended two letters in each line of the test-type. The surgeon should always have several types available for testing patients. The new card can also be obtained from Dorffel & Faerber, Berlin. W. B. INGLIS POLLOCK.

(13) This is **Sweet's** old localiser in a new form, relieving the operator of the necessity of making measurements from the radiographs or of drawing any lines to represent the planes of shadow. ROSA FORD.

(14) The instrument here described by **Edridge-Green**, of Hendon, London, N.W., is a spectrometer so arranged as to make it possible to expose to view in the eyepiece the portion of a spectrum between any two desired wave-lengths. It consists of the usual parts of a prism spectroscope—that is, a collimator with adjustable slit, prism, and telescope with eyepiece. In the focal plane of the telescope are two adjustable shutters with vertical edges, the shutters being carried by levers which rotate about centres near the object glass of the telescope. The shutters can be moved into the field from right to left respectively, each by its own micrometer screw, and to each screw is attached a drum, the one being on the right and the other on the left of the telescope. On each of these drums is cut a helical slot in which runs an index, and the drum is engraved in such a manner that the reading of the index gives the position in the spectrum of the corresponding shutter in wave-lengths direct. Three illustrations accompany the description of the instrument. ERNEST THOMSON.



## XX.—REMEDIES.

- (1) Ewing, Arthur E.—A useful mild caustic; a relief, possibly a cure, for some forms of cancer. *American Journal of Ophthalmology*, November, 1909.
- (2) Fardon, A. H.—Note of a case of enuresis with hypermetropia. *Lancet*, December 11th, 1909.
- (3) Pfalz, G.—On the treatment and after-treatment of cauterisations and burns of the eye. (Ueber Behandlung und Nachbehandlung von Verätzungen und Verbrennung an den Augen.) *Zeitschrift für Augenheilkunde*, Dezember, 1909.
- (4) Gorse, P.—The treatment of trachoma. *Revue Générale d'Ophthalmologie*, 31 décembre, 1909.

(1) The exceptionally favourable results obtained by Ewing, of St. Louis, in certain cases of epithelioma of the eyelids, warts, ulcers and pannus corneæ, fascicular keratitis and dendritic keratitis, seem to warrant rather full notice. The method was come upon accidentally in the following way.—Being in the habit of using a certain solution for the purpose of cleaning-up ulcers, Ewing applied it in a case of slowly growing malignant epithelioma of the skin of the lower eyelid prior to the excision of the growth. The condition of the ulcer so much improved under the action of the solution that experiments were made with its constituents (as to their increased strength) until a caustic combination was found which, teased into the surface of the ulcer, daily or every second day, eventually destroyed every portion of the cancerous tissue along the lid margin and down to the orbicularis. When the place of the cancerous tissue had been taken by healthy granulation tissue, the caustic was stopped, and the ulcer healed kindly and rapidly under the daily application of the original mild solution, followed by white precipitate ointment. The induration eventually disappeared, and the scar itself did not differ from any ordinary cicatrix. (The duration of treatment is not mentioned).

The following is the composition of the mild or "cleansing" solution:—Resorcin, grains 40; salicylic acid, grains 20; carbolic acid, gtt. 1; oil of lavender, gtt. 1; oil of lemon, gtt. 4; oil of bergamot, gtt. 4; alcohol, 95 per cent., 4 ounces. The caustic solution is formed by adding salicylic acid to saturation, *i.e.*, 120 grains to each ounce.

The method was then used successfully upon two other malignant growths and upon a bleeding wart on the lid margin. In the last case a single application was sufficient. Upon the cornea this solution has proved very satisfactory. The following case may be quoted as an example.—Patient aged 70. Large suppurating (traumatic) ulcer of the cornea; cornea necrotic throughout its lower half; hypopyon. After cocaineization, the solution (presumably the strong one) was carefully applied upon a cotton-wrapped wooden probe (toothpick) to the whole ulcerated surface, daily or every second day. The cornea was saved.

We may quote the author's general remarks fully on account of their great interest:—"Where the solution may be employed in place of the actual cautery, or the more powerful caustics, its advantage is in its anæsthetic power, its safety, and its slight tendency to excite acute inflammatory reaction. Upon the cornea and conjunctiva it should be used carefully. Upon epithelial growths it will have little effect where there is much thickening of the epithelial mass, unless it is teased into the growth until the capillaries

become brown or black, and this should be repeated daily or every second day until all the epithelial tissue is destroyed, and the floor and margins of the ulcer are covered with normal, healthy granulation tissue. When either solution is applied to an abraded or a sensitive surface, there is a sharp momentary sting, followed by a little pain, unless a local anæsthetic has been used. This pain quickly subsides. Either of the solutions may then be immediately and frequently reapplied with little or no suffering. The caustic solution first causes abraded, ulcerated, or mucous surfaces to turn white. If this whitened surface is teased, preferably with the weaker solution applied on a pledget of cotton and alternated occasionally with the caustic solution, the teased region will presently change from white to brown or black when red blood is present, usually very readily in adventitious tissue, less readily in normal tissue. When used upon the cornea the immediate and subsequent action of the stronger solution closely resembles that of the actual cautery."

Ewing's article is written in a tone of conviction, and the method certainly seems well worthy of trial.

ERNEST THOMSON.

(2) **Fardon's** patient, an intelligent girl of 7 years, had developed diurnal enuresis since going to school. There was nothing locally, or as regards her general health, to explain the disorder. Hypermetropia of 5D. was corrected, and medication, which had been tried unsuccessfully, was stopped. At the time of writing, six weeks after the glasses had been prescribed for constant wear, Fardon reports that his patient is entirely free from her trouble.

ERNEST THOMSON.

(3) Fuchs (*Lehrbuch*, 1907, p. 132) states that if a burn involves the fornix, symblepharon can in no wise be avoided, but must be, as far as possible, rectified by operation when the inflammation has ended. In Axenfeld's recent text-book (1909) Schirmer enunciates the same view. All authorities seem to agree with these opinions and only suggest treatment of the resulting cicatricial contractions and the functional disorders they cause. Only those who have tried to remedy these deformities know how difficult and often impossible it is to obtain satisfactory results.

**Pfalz**, of Düsseldorf, recommends early transplantation, on the fourth to the sixth day, of skin grafts upon the burnt surfaces of the skin of the lids and the conjunctiva. He thinks mucous membrane is unsuitable in the eye. We must not wait for granulations to appear; granulation always results in contraction. If a piece of epidermis, folded like a piece of notepaper, be sewn into the fornix at once, symblepharon will be almost always avoided. The epidermis rapidly adheres to the palpebral conjunctiva, but only partially to the globe, because the eyes do not remain at rest. This unattached portion must be removed later with scissors. The sclera always heals well, and as the new tissue contracts, it draws the neighbouring conjunctiva over the injured area. If the case be not seen until a symblepharon has already formed, this must be dissected away from the tarsus, not from the sclera, or little sclera would remain behind, and then a piece of epidermis must be sewn into the raw defect.

The conjunctivitis resulting from slight burns must not be treated with astringents, but with mild antiseptic collyria, of which the best is mercuric oxycyanate in a 1-10,000 solution.

These suggestions are extremely valuable, but we would advise that instead of skin, a graft from the lip be used for transplanting into the eye. For years past we have given up skin grafts and used mucous membrane. A skin graft always causes trouble, because the hairs transported into a warm damp environment luxuriate abundantly, and give rise to constant irritation.

A flap cut from the lip, and pared down thin, will almost always adhere, although it is true that skin adheres better. T. HARRISON BUTLER.

(4) **Gorse**, after six years' experience in Algeria, gives his impressions of the treatment of trachoma. Trachoma has three stages.—(1) The stage of onset (*période de début*). (2) The stage of acme (*période d'état*). (3) The stage of consecutive lesions. The first of these is treated by *caustics*, as nitrate of silver, sulphate of copper. In the second, surgical measures are employed. *Scarifications* are useful but not in themselves sufficient. *Grattage* of individual granulations—if this is possible—is of value, but grattage of the whole surface tends towards subsequent deformity. *Brossage* (brushing with a stiff brush under general anæsthesia) is a treatment which is suitable only when the whole mucous membrane is hypertrophic; otherwise, like grattage, healthy tissue is destroyed and consecutive entropion is encouraged. *Frottage* (massage with a cotton tampon wrung out of 1 to 2,000 sublimate) is a mild form of brossage, and can be performed under local anæsthesia. Gorse has employed this method successfully in association with scarification; deformity has not resulted. *Expression* by Knapp's forceps is mentioned, but not apparently employed by the author. *Galvano-cauterization* may be used for isolated granulations. *Electrolysis* with the negative pole has been employed by some. *Excision of the cul-de-sac*, after the manner of Galezowski, should be entirely abandoned on account of the subsequent symblepharon and entropion.

For the third stage, Panas' operation of division of the tarsus is the best to employ for trichiasis and entropion; while for pannus, jequirity treatment or its modifications (jequiritol, abrine) or peritomy finds a place. The author's personal views as to the treatment of the second stage seem to indicate that tendency towards therapeutic simplicity in much-treated diseases which is perhaps a sign of our times. "If copper sulphate prove insufficient, we may have recourse to frottage, reinforced by previous scarification, and may complete the treatment by cauterization with the galvano-cautery." Here it is obvious that the well-tried copper sulphate is considered to be the chief therapeutic agent.

ERNEST THOMSON.

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## BOOK NOTICES

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**A Contribution to the Study of Amaurosis and of Blindness in the course of Pregnancy.** (*Contribution à l'étude de l'amaurose et de la cécité au cours de la grossesse.*) By PIERRE FAUCONNIER. Thèse de Paris, June, 1907. Paris: A. Michalon, 36, Rue Monsieur-le-Prince.

The writer of this thesis, Dr. Fauconnier, while working in the Maternity Department of the Hôtel-Dieu, Paris, was impressed by the case of a woman, manifestly far advanced in pregnancy, who sought admission on account of sudden blindness by which she had been overtaken a few hours before. This was the starting-point of Fauconnier's interest in the visual troubles of pregnancy, and acting upon the advice of his master, Dr. Champetier de Ribes, he has made them the occasion of his inaugural thesis for the Paris doctorate. The writer is not an ophthalmic surgeon. He quotes many cases from the literature, and it may be remarked, in passing, that he evinces a familiarity with English and American writings that is as praiseworthy as it is rare in French authors.

Fauconnier's conclusions are as follows :—

1. During the course of gestation, parturition, and child-bed, amblyopia and amaurosis may occur, and may often lead to complete blindness.

2. These alterations in the sight of pregnant women may be of different origin : (a) they may depend upon arterial hypertension ; (b) they are sometimes the result of abundant losses of blood ; (c) most of them are connected with the presence of albuminuria, of which we distinguish two forms—albuminuria due to an existing renal affection, awakened or rendered worse by pregnancy, and albuminuria directly provoked by the state of gravidity. In the last-named case amaurosis is, on the same grounds as albuminuria, a manifestation of gravidic hepato-toxæmia. (c) The forms of amaurosis spoken of as eclamptic and uræmic also proceed from this same toxæmia.

3. Amaurosis connected with nephritis or Bright's disease has an insidious beginning. It appears in the course of the pregnancy, and its slow evolution often enough ends in an incomplete re-establishment of the visual acuity. On the other hand, amaurosis connected with gravidic hepato-toxæmia, begins suddenly towards the end of gestation, and usually terminates with the latter. Its prognosis is much better.

4. The treatment should include milk diet, which reduces to a minimum the production of toxins and exalts the neutralising function of the liver, and purgatives, whereby the intestines are washed out and hepatic activity is solicited. If after such measures the amaurotic phenomena persist or become aggravated, even although the albumin diminishes, and if there co-exists a nephritis which pregnancy must render worse, it is best to provoke labour artificially.

SYDNEY STEPHENSON.

**Atlas of External Diseases of the Eye.** By Dr. R. GREEFF (Berlin).

Translated by P. W. SHEDD, M.D. (New York). Pages viii and 140.

Royal 8vo. With 84 coloured illustrations. Price, 42s. net. London :

H. K. Lewis, 136, Gower Street, W.C. 1910.

The latest atlas of external diseases of the eye is by Professor Richard Greeff, of Berlin. It is a good deal more than an atlas. It is a short treatise on external diseases with illustrative plates. For instance, no less than ten of these fairly large pages are occupied in the description, therapy, and diagnosis of blepharitis marginalis. The descriptions are often most concise, although omissions occur here and there. Operative measures, of course, are not discussed in detail.

Before saying anything about the plates it should be said that these have been prepared, not directly from life, but from wax models which the author, in conjunction with the sculptor, F. Kolbow, has been accumulating for a number of years. The request of the publishers to prepare an atlas was acceded to only when the author was convinced that modern art could produce pictures of distinctly better *technique* than those hitherto published. He thus set himself a high standard. Now, it is the business of a critic to criticise : therefore we have no hesitation in saying that while some of the plates are exceedingly good, others are distinctly of less merit. Such, indeed, can be said of any work of this kind, without detracting from its general value. But in one matter we have been grievously disappointed, and that is with regard to glaucoma. There is only one plate showing this disease, and that one is not characteristic, since an iridectomy has been performed. One-and-a-half pages of letterpress and one figure suffice for glaucoma, while iritis receives three-and-a-half pages and six figures. Absolutely no attempt is made at differential diagnosis between



glaucoma and iritis. Yet, is not such an atlas specially of value to the student and beginner whose most dangerous pitfall is this one? The author is not entitled to reply that iritis and glaucoma are essentially *internal* diseases, since in that case he should not have included them at all. Such criticism apart, Dr. Greeff's work does him, the sculptor, and all concerned in the reproduction of the plates, the greatest credit.

As to the translation the best we can say of it is that the author's meaning is usually clear in spite of the use of such extraordinary words and expressions as "derm," "squam," "statte," "in particulate," "cognize," "norm," "endurable degree of vision," "perlucence," "conscient," "obstipation." The number of typographical errors, including wrong references to plates, prompts the critic to say that a volume of high merit deserves better treatment from the proof-reader than this one has received.

The book is strongly bound and the paper and print leave nothing to be desired.

ERNEST THOMSON.

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## CORRESPONDENCE.

[While THE OPHTHALMOSCOPE will at all times welcome correspondence from its readers, the Editor does not hold himself responsible for any views expressed in this column.]

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### THE TREATMENT OF ELEMENTARY SCHOOL CHILDREN.

*To the Editor of THE OPHTHALMOSCOPE.*

DEAR SIR,

A note printed in your last issue, relative to the appointment of Mr. C. J. H. Gunning, seems to need comment. The attempt that is being made at St. George's Hospital to deal with the question of the London County Council school children is in my opinion, the most promising solution of a very difficult problem.

There are three parties to this question: the children, the general public, who are represented by the L.C.C., and the medical profession. It is to the children's interest (and they are the most important party) that they should be examined by competent persons. It is the duty of the L.C.C., representing the general public, to take care that this examination shall be efficient, and not excessively costly. It is the duty of the medical profession, also, to see that the examination is properly carried out, and at the same time to see that its members are not "sweated."

To ensure the first desideratum, that the children be properly examined, we cannot refer them to their own general practitioner; comparatively few men in general practice have time to keep up an adequate knowledge of refraction work. It follows, therefore, that this work must be undertaken by those who have such opportunity.

Nor, on the other hand, is it fair that the already overworked Hospital surgeon should be expected to undertake this duty, nor would the L.C.C. be able to pay him a reasonable fee. At the same time it is eminently desirable, in the interests of the children, that the best possible advice be available for them in special circumstances.

It is, as has been said already, the duty of the L.C.C. to see that this work is carried out at the smallest possible cost to the public. Therefore it seems to me a monstrous thing to suggest that it is wrong to make use, where possible, of existing Hospitals, built for or adapted to the special work now required.

In the appointment of Mr. Gunning at St. George's, it has been possible to combine the greatest amount of good with the least possible injustice. Mr. Gunning has acted as clinical assistant to the Ophthalmic Department of the Hospital for several years, and is therefore fully qualified to undertake the duties; he is in general practice in the neighbourhood from which many of the patients are drawn; and, lastly, in the interests of the children he is bound by the regulations of his office to refer any cases of special difficulty to the ophthalmic surgeons of the Hospital.

It seems clear, then, that the Hospital has taken the best care that it can for the children; it receives a fair rent for the use of its premises, calculated on the actual cost of each out-patient, and a fair salary is paid to Mr. Gunning by the L.C.C. for the work done.

The only alternative to some scheme of this kind is the costly experiment of establishing school clinics; unless the officers of these clinics were of equal experience with the men who hold the posts of Surgeons to the Hospitals, the children would be worse off than under the arrangement existing at St. George's. If the L.C.C. wished to appoint such men to the clinics, the cost would be enormous and prohibitive.

It will be seen that the opinions I hold are almost identical with those of Dr. Grinshaw as given by him in the February number of *THE OPHTHALMOSCOPE*: the sole difference that I can detect is that he favours the appointment of these officers by the County Councils, whereas I prefer that the Hospitals should nominate them; the salary in both cases being paid by the Public Authority. This latter method of appointment seems to me more advantageous, because it gives them the right of consultative services of the Staff.

It may be well to point out that Mr. Gunning sees the ophthalmic cases only; the other special departments are under the care of other clinical assistants, who are all, I believe, general practitioners in the neighbourhood of the Hospital, having special knowledge of the several subjects. Lastly, all care is taken both by the officers of the L.C.C. and by the Hospital almoner to prevent the acceptance of children unsuitable for hospital treatment.

I am, Sir, yours, etc.,

HAROLD GRIMSDALE.

*Ophthalmic Surgeon to St. George's Hospital, S.W.*

London,

February 3rd, 1910.

## A MODIFICATION OF SNELLEN'S COLOUR TYPE.

*To the Editor of THE OPHTHALMOSCOPE.*

DEAR SIR,

Mr. Ernest Clarke, in his criticism of the above test, has been really describing the "Friend" test. The "Stained" test is, in fact, a reversal of it. I quite agree with him, however, in his opinion of the use of prisms with the test. These in the majority of cases may be quite unnecessary. The test may even gain by being thus simplified. There are, however, malingerers who are perfectly well aware of the existence of the "Friend" and similar tests, and it is to meet these cases that prisms are specially indicated. The one drawback to the "Stained" test is the great difficulty of reproducing it by mechanical means. It has been in the hands of several of the best lithographers here, and all say it is impossible to reproduce the correct colours by means of the inks in general use. The test can thus be only printed by hand.

Yours faithfully,

JOHN PEARSON.

4, Middleton Terrace.

Ibros, Govan.

February 19th, 1910.

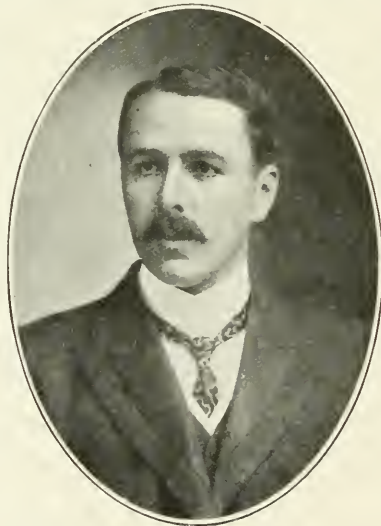
## NOTES AND ECHOES.

### Obituary.

By the death of William Ilbert Hancock, which occurred at 27, Queen Anne Street, London, W., at the early age of 36 years, on January 26th last, the profession has sustained a grievous loss. Mr. Hancock died from embolism a few days after the successful performance of an operation for appendicitis. Mr. Hancock, who had been a student of Guy's Hospital, qualified as a member of the Royal College of Surgeons in 1896, and as a fellow in 1898. He became a member of the Ophthalmological Society in 1899, and contributed several papers of interest to its *Transactions*. At the time of his death he was assistant surgeon to the Royal London Ophthalmic Hospital (Moorfields), and ophthalmic surgeon to the East London Hospital for children (Shadwell) and to the Bolingbroke Hospital. He was, until last year, senior assistant surgeon to the Central London Ophthalmic Hospital. He contributed several papers to recent numbers of the Moorfields Hospital *Reports*.

The following appreciation of Mr. Hancock has been contributed by his colleague at Moorfields, Mr. C. Devereux Marshall :

William Ilbert Hancock was in many ways an exceptional man. When a student he was able to take the lead in all matters concerning games and



The late Mr. William Ilbert Hancock.

athletics, and, in addition, he represented his county (Somerset) in both tennis, cricket and football ; while it is practically certain, that had it not been for his slipping a semilunar cartilage, he would have been one of the team selected to play for England in Rugby football. In spite of all that this entailed, he never neglected his professional work. This is proved by the fact that he qualified in five years, having during that time done the necessary three years dissections for passing the first Fellowship which he successfully accomplished.

When one considers the fact that the question of making a living by his profession was never an urgent one with him, one realizes that his strength of character was of no ordinary type. He was one of those who could not bear to do things by halves, and anything he considered worth taking up he considered worth doing well. How admirably he succeeded his whole course bore

out. As an ophthalmic surgeon he was perhaps the most accomplished man for his age and experience of anyone one has met. He seemed to have a keener insight into the mysteries of a case than many men of double his experience. Yet, withal, he was of such a retiring disposition that his more recent friends and acquaintances never realized how much work he had done. After having known him really well for years I remember with what astonishment I heard from another what a great athlete he had been. He never talked about himself, and always seemed ready to step back and allow anyone to take the front place rather than push himself forward. When hospital appointments were going and his friends hoped to see him elected, it was quite curious to notice how he weighed any action that he might contemplate taking, so as not to appear to anyone to be getting what might be considered an undue advantage, while, as for asking a favour from anyone, or doing anything to curry favour with one who had influence, no power on earth would induce him to do such a thing. His fine manly independent disposition was altogether at variance with such methods. Still, where he might have been at a disadvantage through this trait in his character, he more than made up for it when his good qualities were realised. His knowledge of his subject was such that his opinion was sought for and valued by his seniors as well as by his juniors. As an operator he was not only most successful, but also most dextrous. The fine manipulative style of his hands and fingers had to be seen to be appreciated, but never was he proud or conceited of anything he accomplished. Many there are who are only too ready to rush into print and to publish their successes, but it was characteristic of Hancock that he thought just as much or more of a failure as of a success, and the very last paper he published, and probably the last he ever wrote, appeared in the January number of the *Royal London Ophthalmic Hospital Reports* and was entitled, "Three cases of Post-operative Infection," in which he describes three extractions of cataract he did, in two of which the eye had to be enucleated, and in the third, although the eye was saved, yet the sight was much damaged. These three cases certainly reflected no discredit on himself, as anyone reading the paper will at once see: still the moral courage is not given to everyone to publish such cases, even when no blame can be attached to the operator. That was the sort of spirit which he exhibited in all his doings: a frank, honest, straightforward line was always one which he would adopt.

Men of such high principles are by no means met with universally, but when they are, how much they assist by their example those who are striving after better things! But few knew the influence he had on others, and in all probability he never realized it himself. His loss is great and his place will not readily be filled.

The death is announced of Daniel Mowat, which occurred at his residence at Westcliff-on-Sea. Dr. Mowat, who was a graduate of the University of Edinburgh, was a member of the Ophthalmological Society of the United Kingdom, and had been a clinical assistant at the Royal London Ophthalmic Hospital, Moorfields, for the lengthened period of twenty years.

The following appreciation of Professor Widmark, whose death was announced in *THE OPHTHALMOSCOPE* of last month, has been contributed by Dr. Eric Nordenson, of Stockholm:

John Widmark died on December 15th, 1909, at the age of 59 years. The cause of his death was cancer of the intestines. By a laparotomy, performed on March 9th, 1909, it was ascertained that the cancer could not be operated upon successfully.



In 1891 he was appointed the first Professor of Ophthalmology in Sweden at the Medical School in Stockholm (Karolinska Medico-Kirurgiska Institutet). After bacteriological researches as to the nature of ophthalmia neonatorum, Professor Widmark called the attention of the medical authorities to the serious evils resulting from this disease, and to him are due the energetic measures which have been taken in Sweden since the year 1886 to cope with



The late Professor Widmark.

this scourge. In the course of his studies on the influence of the ultra-violet rays on the media of the eye and on the skin, he has shown the important part played by these rays in producing snow-blindness, ophthalmia electrica, and erythema solare.

From 1888, together with Professor J. Bjerrum, of Copenhagen, Widmark has been editor of "*Nordisk Optalmologisk Tidskrift*," and from 1898 he has published the results of his own and his pupils' researches in *Mittheilungen aus der Augenklinik des Carolinschen Medico-Chirurgischen Institutes*.

The death is announced, at the age of 69 years, of Samuel B. Smallwood, one of the consulting staff of the New York Eye and Ear Hospital.

Appointments.

MR. ARNOLD LAWSON has been appointed assistant ophthalmic surgeon to the Middlesex Hospital, London.

Mr. W. Watson Griffin has been appointed to the ophthalmic department recently established at the Worthing Hospital. Mr. Griffin has for the last eight years been in charge of the eye department of the Sussex County Hospital at Brighton.

The Home Secretary has appointed Dr. James Hinshelwood and Dr. A. Freeland Fergus, both of Glasgow, to be medical referees under the Workmen's Compensation Act, 1906, in Scotland.

Dr. H. Coppez, our distinguished Belgian correspondent, has been appointed Editor of the *Journal Médical de Bruxelles* in succession to Dr. V. Pechère.

The Strasburg appointment has been accepted by E. Hertel, extraordinary professor of ophthalmology in the University of Jena.

Dimmer, of Graz, has accepted the chair in the first Vienna University, *Augenklinik*.

By a recent vote of the French Parliament a University of Algiers has been created. The faculty is a mixed one of medicine and pharmacy. Among the appointments we note that of Dr. Cange, as professor of clinical ophthalmology.

Dr. Hans Landolt has received the title of professor in Strasburg. Dr. Salzer has been nominated extraordinary professor in Munich.

*United States.*—Thomas C. Phillips has been re-elected dean and professor of ophthalmology in the Wisconsin College of Physicians and Surgeons. G. W. Beane has been re-appointed chief of the department of ophthalmology in the Ohio Valley Hospital, Pa. E. A. La Mothe has been elected professor of ophthalmology to the Chicago Eye, Ear, Nose, and Throat College.

\* \* \* \*

PROFESSOR MOTAIS, of Angiers, editor of *L'Ophthalmologie Provinciale*, was on Sunday, January 9th, the centre of an enthusiastic gathering assembled to convey to him its general and particular congratulations on his having recently been made the recipient of the distinction "Chevalier of the Legion of Honour." The proceedings consisted of a banquet at noon at the Grand Hotel, Angers, followed by a general reception, at which the opportunity was taken to present to the distinguished ophthalmologist a fine piece of sculpture, which had been subscribed for by nearly 300 of his colleagues, friends, and pupils. In the list of those unable to be present were found the names of many well-known ophthalmologists, and a number of individuals who had understood that the Grand Hotel in Paris was the *rendezvous* instead of that at Angers—a tribute to Professor Motais' sphere of work. At the reception Dr. Legludie, Director of the Angers School of Medicine and Pharmacy, offered the sincere congratulations of the School, and referred to the professor's connection with it. Commencing practice at Ingrandes in 1870, Professor Motais, a Breton by birth, early realised that his energies were cramped by so small a radius of action, and when in 1875 the appointment "Chef des travaux anatomiques" at the Angers School became vacant, he at once applied for and obtained it. For eleven years Motais worked hard as an anatomist, and produced during this time his "Treatise on the anatomy of the motor apparatus of the eye of man and vertebrates," a work which, though meeting at first with much opposition, became generally accepted and found a place in French ophthalmic literature.

In 1891, Motais originated a free course of ophthalmology and applied optics, carrying it on for eleven years. In 1901 he was made "membre correspondant" of the Academy of Medicine, the first provincial specialist to be appointed. In 1904, his teaching was recognised by the creation of a chair of ophthalmology at Angers, the first in a provincial school, and which he occupied under the presidency of Professor de Lapersonne. The speaker referred to the high character of Motais' teaching, both as anatomist and as ophthalmologist, and concluded by paying tribute to his work on strabismus, sympathetic ophthalmia, and his recent operation for ptosis. Congratulatory addresses followed on behalf of "The General Society of French Oculists," "L'Ophthalmologie Provinciale," "The Society of Mercantile Geography," "The Syndicate for the advancement of Anjou," and "The internes and students of the Angers School of Medicine," each testifying to Prof. Motais' ceaseless activity in professional and other spheres.

The fine piece of sculpture "A young Carthaginian attacking an eagle" by Jean Verschneider, was then presented by Dr. Tagot, Motais' teacher of

anatomy. Professor Motais, much affected by the cordiality of the proceedings, spoke at some length in reply. Addressing each speaker in turn, he concluded a gracefully worded speech by a poetic and evidently sincere tribute to Brittany, the land of his birth.

\* \* \* \*

**Oxford  
Ophthalmological  
Congress**

THE next meeting of the Oxford Ophthalmological Congress will be held on July 20th, 21st, and 22nd at Keble College. All who have attended former meetings have now the privilege of joining the Congress (without election) as Foundation Members on payment of the entrance fee of 10s. 6d. Names and remittances to the Hon. Secretary, Mr. Sydney Stephenson, 33, Welbeck Street, London, W., not later than March 24th, 1910. Others who wish to become Original Members should communicate with the Secretary, who will furnish particulars. Names should be sent in by June 25th, 1910.

\* \* \* \*

**The Tragedy  
of Cataract.**

IT was stated at an inquest at Battersea on February 12th, on John Thomas Willgoss, aged sixty-three, a pianoforte-action maker, who committed suicide by cutting his throat, that he had been unable to work for two or three years on account of cataract. Eighteen months ago he had his left eye removed, and he was dreading another operation, which was to have taken place at the Westminster Ophthalmic Hospital in six weeks' time.

\* \* \* \*

**National Eye Hospital.** To judge from the appended advertisement, clipped from a recent issue of the *Evening News*, the institution known as the National Eye Hospital, in Oxford Street, London, which was described in THE OPHTHALMOSCOPE of July, 1908, has widened its scope, and now caters for the ear, nose, and throat as well as for the eye. The advertisement runs as follows:—

EYE AND EAR CLINIQUE.

123, Oxford-street, W., entrance Wardour-st.

An Institution where fully qualified Specialists may be consulted for Affections of the Eye, Ear, Nose and Throat.

It is intended for those who, whilst adverse to the charitable treatment of hospitals, yet cannot afford to see a consultant privately, especially when an operation or continuous treatment is required.

Fee 10s. 6d. first consultation, and 5s. for subsequent ones if within monthly intervals.

Reception and Consultation Rooms Open Daily 2-4. Even., Tues., Fri., 6.30 to 8.30.

Tel., 15,265 Central.

J. B. HELM, Secy.

\* \* \* \*

**London Ophthalmic  
Exhibition.**

THE second London Ophthalmic Exhibition will be held at the rooms of the Medical Society on March 11th and 12th next. It will be open, free to members of the medical profession, from noon to 9 o'clock p.m. on each day. A collection of optical appliances and surgical instruments of interest to ophthalmic surgeons will be on show. The organizing secretary is Mr. Ernest Schofield, of 11, Chandos Street, Cavendish Square, London, W.

\* \* \* \*

**University of Oxford.** NOTICE has been given that an examination for the Diploma in Ophthalmology will commence on Tuesday, July 19th. Information can be obtained on application to the Assistant Registrar, University Registry, Old Clarendon Building.

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## ORIGINAL COMMUNICATIONS.

## CONGENITAL ANTERIOR STAPHYLOMA.\*

BY

GEORGE COATS, M.D., F.R.C.S.

ASSISTANT SURGEON TO THE ROYAL LONDON OPHTHALMIC HOSPITAL, MOORFIELDS, E.C.

CONGENITAL anterior staphyloma is a subject which possesses an interest beyond the domain of ocular pathology, and which, rightly interpreted, may be expected to illustrate certain obscure intrauterine processes. In this condition the child is born with a lesion which closely resembles the results of a perforating ulcer of the cornea in post-natal life. The cornea is opaque, and is bulged forwards between the lids; it is lined posteriorly by uveal pigment, which shows through in the thinner parts, giving them a bluish colour. Microscopically also the similarity to a post-natal anterior staphyloma is striking. The regular lamellæ of the cornea are replaced by an irregular cellular tissue resembling cicatricial tissue, the membranes of Bowman and Descemet are either entirely absent or present only in the periphery; the iris is totally, or in the greater part of its extent, adherent to the cornea, and its stroma is much atrophied while its pigment epithelium is preserved; the lens may be in position, or its shrunken remains may be adherent to the cornea, or it may be completely absent; the ciliary body is dragged upon and distorted; the vitreous, retina, and choroid are not necessarily much altered, and the papilla may or may not be cupped. In all these respects the resemblance to a post-natal staphyloma is perfect, and, indeed, most writers have regarded the origin of the condition from intrauterine ulceration as self evident. Recently, however, E. Treacher Collins, reviving an old hypothesis, has expressed the opinion that a lack of differentiation is the essential factor. The mesoblast, from which the iris and pupillary membrane are to be formed, is normally separated off from the cornea by the formation of a cleft—the anterior chamber. If this process fails, the posterior layer of mesoblast will remain adherent, and neither iris nor cornea is likely to develop normally. Drainage will be interfered with at the corneo-iridic angle, the intraocular tension will be raised, and the fused cornea and iris will become bulged out between the lids.

These two explanations may be conveniently spoken of as the “ulcerative” hypothesis, and the “malformation” or “non-differentiation” hypothesis.

The malformation hypothesis demands very careful consideration. In the first place, it would bring congenital anterior staphyloma into line with a number of other abnormalities which seem certainly to be due to imperfect differentiation, such as some instances, at least, of anterior synechia of the pupillary membrane and of buphthalmos. In the second place, it would avoid some of the graver difficulties connected with the theory of intrauterine ulceration. Transmission from the mother to the foetus *in utero* has been proved for a very large number of the infective diseases, one might almost say for all of them, but in every case the infection seems to be endogenous, and through the placental circulation—perhaps by means of a lesion of the placenta itself. In the eye, for instance, the occurrence of endogenous foetal keratitis, iritis, cyclitis, and choroiditis, has been proved beyond the possibility of doubt. The experimental researches of Ferrari are quoted by Ballantyne

\*From the Hunterian Lecture delivered at the Royal College of Surgeons of England, March 14th, 1910.

(*Manual of Antenatal Pathology and Hygiene*, Vol. 1, p. 179, 1902) to show that materials can pass from the lymphatic system of the mother through the stomata of the amniotic membrane, and so to the liquor Amnii and the external surface of the foetus, but these observations seem to have little confirmation in actual human pathology; there seem to be no cases of children born, for instance, with skin lesions due to infection from the liquor Amnii, or with visceral lesions due to its ingestion.

This is the chief difficulty of the ulcerative hypothesis of congenital anterior staphyloma—to explain how the infection (if infection it be) gains access to the cornea. It is unlikely that the circulation is the path, since, as Leber has pointed out, the foetal cornea is always an avascular structure; moreover, the condition corresponds not with the endogenous infections of later life—such as interstitial keratitis—but with the perforating ulcer of exogenous origin. Two further difficulties are avoided by the non-differentiation hypothesis: (1) the foetal eyelids are normally closed from the third month till shortly before birth, and would presumably exclude any infective organisms in the liquor Amnii. (2) the child when born seldom shows any evidence of conjunctival inflammation, such as might be expected if an infective agent had attacked the cornea.

On the other hand, the non-differentiation hypothesis has problems of its own which appear to me to be even more insoluble. The difficulties in the way of accepting intrauterine ulceration are hypothetical—it is hard to explain the genesis of the ulceration, probably owing to our ignorance of ante-natal pathology; but if the ulcerative process be granted, it is undeniable that the structural details actually found in the specimens are, in the main, explained. The malformation hypothesis, on the contrary, encounters the much more serious difficulty that the details of structure do not easily fall into line with the explanation. In the first case, the difficulties are negative; in the second, positive.

If the iris had been imperfectly separated, one would expect the deep layers of the cornea to be malformed, but the superficial to be approximately normal. In my second Lecture I shall have to show an instance of extensive lack of differentiation of the pupillary membrane; in that case the surface epithelium, membrane of Bowman, and superficial corneal lamellae are all intact. It is true that in cases of genuine malformation the membrane of Bowman may be imperfectly formed, and a few vessels may be found in the stroma, but an appearance of sharply defined loss of substance on the superficial aspect of the cornea (Fig. 1), is incompatible with mere lack of differentiation between the cornea and the subjacent structures; in malformation, even when the membrane of Bowman is defective, the surface of the cornea is smooth and the epithelium is of fairly even thickness. The occurrence of vessels, chiefly in the superficial layers of the cornea, is recorded in some of the published cases of congenital anterior staphyloma; this is against malformation and in favour of a superficial ulcerative process. In congenital anterior staphyloma, on the other hand, the membrane of Bowman, if present at all, is found only in the periphery, the epithelium shows the irregular downgrowths on its deep aspect which are common over the healed surface of an ulcer, and the stroma has the irregularity of cicatricial tissue. In at least one recorded case (Runte) cavities lined with surface epithelium have been found within the pseudo-cornea. The connection of such cavities with an ulcerative process is obvious, while it seems impossible to explain them by any mere lack of differentiation.

Still more important is the presence of uveal pigment in the superficial layers of the pseudo-cornea (Runte, Schiess-Gemuseus, Krückmann); one

might perhaps expect some irregularity in the pigmentation of the deep layers if the iris had not separated, but pigment close under the epithelium can only be explained by a perforation with iris prolapse.

The strongest evidence from structure, however, is derived from the state of the lens. In some cases of congenital anterior staphyloma it is totally absent, in others its shrunken remains adhere to the cornea, and in others, again, it is normal and *in situ*—these three conditions corresponding exactly with what obtains after post-natal perforating ulcer. On the non-differentiation hypothesis total absence of the lens can only be explained by a failure in the formation of the lens-vesicle. But it is impossible to believe that in these circumstances the invagination of the optic-vesicle and the development of the other intra-ocular structures would proceed normally; yet there is no case on record of congenital anterior staphyloma being associated with what may be called the pure malformations. It is remarkable that the intraocular structures not directly affected are usually quite normal. Moreover, although the lens may be absent the zonula may be present. If it be true that the zonula is developed by a process of stretching as the lens recedes from its former contact with the epithelium of the secondary optic-vesicle, then the presence of zonular fibres proves that the lens was formerly in position, and that its absence can only be due to its subsequent extrusion through a perforation.

A case which I had the opportunity of examining will illustrate these, as well as certain additional points. It shows also an extremely rare and interesting abnormality of the uveal tract. From the clinical standpoint the case was reported by Arnold Lawson (A. Lawson, *Trans. Ophth. Soc.*, Vol. XXV, 1905, p. 314, and A. Lawson, and G. Coats, *Trans. Ophth. Soc.*, Vol. XXVI, 1906, p. 36. In this paper the complete microscopical description will be found). In the right eye there was a congenital anterior staphyloma, while the left was small and showed corneal opacities, the anterior chamber being present however. The staphyloma was not very ectatic, but was extremely thin, and when the child was sixteen weeks old, spontaneous rupture occurred. The eye was excised two days later, and in this short interval such changes as had supervened were easily distinguishable from the results of the intrauterine processes.

It was found that the cornea was very well formed in the periphery, but extremely thin in the centre (Fig. 1). The membranes of Bowman and Descemet were present in places in the periphery, absent centrally. The iris was almost totally adherent and its stroma was much atrophied, but the sphincter and sphincter border were well preserved on each side. The central thinned area corresponded therefore with the pupil; it was lined posteriorly not by pupillary membrane, but by a long piece of lens capsule (Fig. 1), with lens remains on its anterior surface. The lens remains were partly in contact with the capsule, partly embedded in the pseudo-cornea at some little distance from it (Fig. 2). The thinning was almost entirely due to loss of the superficial layers, and was so extreme in places that the surface epithelium was in contact with the lens capsule (Fig. 3); one edge of the area was abrupt, the other more shelving (as is common in post-natal seriginous ulcers) (Fig. 1), and the whole was lined with epithelium except at the site of the post-natal perforation, which had occurred at the thinnest part. Following the perforation the vitreous had escaped, and a loop of retina had become displaced into the gap. The zonula was present. The tissues of the thinned part had the hypercellular, irregular appearance of cicatricial tissue in a fairly advanced stage of organisation.

Before going on to the other abnormalities found in the eye, I should like to point out the significance of those already described. The very great

## CONGENITAL ANTERIOR STAPHYLOMA.

BY

GEORGE COATS, M.D., F.R.C.S.



Fig. 1.

FIG. 1. The central portion of the cornea. The stroma is cicatricial and there is a considerable loss of substance chiefly from the superficial aspect, the membranes of Bowman and Descemet being destroyed. On the left-hand side the edge of the defect is steep, on the right shelving, a condition which is common in post-natal ulcers.

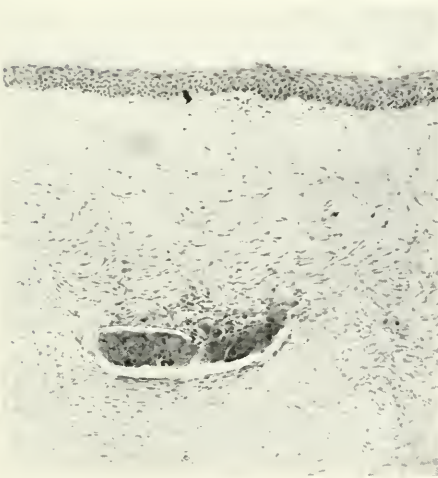


Fig. 2.

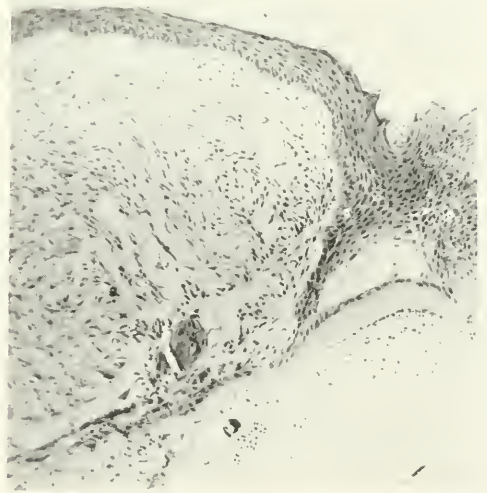


Fig. 3

FIG. 2.—A piece of lens substance embedded in the pseudo-cornea. Note the cicatricial appearance of the surrounding tissues and the absence of the membrane of Bowman.

FIG. 3. In this situation the stroma of the cornea has entirely disappeared, and the surface epithelium lies in contact with the lens capsule. This appearance is incompatible with lack of differentiation between the cornea and the uvea.









Fig. 4

FIG. 4 From *Trans. Ophth. Soc.* Vol. XXVI, p 35, 1906. To show displacement of the inner layers of the ciliary body on the outer. A. Anterior chamber. IR to I'R' Intercalary region. SI. Sphincter iridis. I. Iris. C. Cyst, derived from the epithelium of the ciliary body. C.P. Ciliary processes. pp. Pars plana. OS. Ora serrata. CIM. Circulus major. MC. Ciliary muscle. R. Retina.

difference in thickness between the periphery and the centre of the cornea agrees badly with the theory of non-differentiation. Where the iris was adherent the cornea was very well formed; where there was no adhesion it was very ill-formed. The total disappearance of the corneal stroma from the centre, where the epithelium was in contact with the lens capsule, cannot be explained by lack of differentiation, and taken along with the generalised thinning, proves that there had been loss of substance. This loss of substance is not explained by any special bulging or atrophy of the central part, and is from the superficial, not the deep, aspect of the cornea.

The piece of lens capsule adherent to the pseudo-cornea was thick and well developed. Inasmuch as lens capsule is a cuticular deposit from lens fibres, the finding of a piece of it in this case furnishes absolute proof that the lens had not failed to develop, and that it was formerly present within the globe; the presence of the zonula proves the same thing. The fact that only a few remnants of the lens were found can therefore be explained in no other way than by its evacuation through a corneal perforation: that the lens did not escape through the two days' old post-natal perforation is proved by the observation that the remains are deeply embedded among cicatricial tissue of old standing, and that the capsule is firmly adherent to non-infiltrated tissues at some distance from the post-natal perforation. In my opinion, these structural details prove, beyond the possibility of question, that the lesions in this eye were the result of a perforating corneal ulcer; in many respects, these observations are supported by recorded cases.

A very peculiar abnormality, which has also a bearing on points at issue, remains to be described. It consists in the forward displacement of a portion of the uvea relative to the parts lying more externally (Fig. 4). On tracing the cornea out into the periphery it is found that the adhesion of the iris ceases over a small area, leaving a small portion of anterior chamber (A) lined by membrane of Descemet and endothelium. The membrane breaks up in the usual way into the ligamentum pectinatum which, although elongated, has nearly normal relations to the canal of Schlemm and to the commencement of the ciliary muscle (M C). On the other hand, the root of the iris (I), ciliary processes (C P), pars plana (P P), and ora serrata (O S) are in normal relations to one another. But the latter set of structures has suffered a complete forward displacement relative to the former, so that the ciliary processes arise in front of the ending of the membrane of Descemet, the pars plana is on a level with the ligamentum pectinatum, and the ora serrata is actually in front of the ciliary muscle; the ciliary muscle consequently is lined with choroid, in which the membrane of Bruch can be distinguished. Two other instances of this condition, and one doubtful case, have been recorded, all in congenital anterior staphylomata (Krüchow, Treitel, Treacher Collins). It seems to be due to the carrying forward of the displaced layers as the staphyloma, gradually bulges, and does not occur in post-natal staphylomata, because the parts are then more firmly knit together, and cannot be slid on one another in the same way, but simply become elongated and atrophied.

In my second Lecture I shall have occasion to point out another instance of this relative independence, during foetal life, between the ciliary muscle and the layers internal to it. Under opposite conditions, when the iris, instead of being dragged forward, is prevented from growing inward in the normal manner, the inner layer of the uvea, including the ciliary processes, may be shifted considerably backwards, while the ciliary muscle remains in position.

Collins has explained the anterior displacement in this eye as being due to an abnormal growth forward of the secondary optic-vesicle relative to the underlying non-differentiated mesoblast. It will be noticed, however, that



the displacement concerns more than the secondary optic-vesicle, for the underlying mesoblast is also shifted. Again, in my case the differentiation of the epi- and meso-blast is by no means very imperfect; at the pupillary border the sphincter iridis and pigment epithelium are present and in their normal relations, and in the periphery both the iridic and corneal structures are almost perfectly developed. No mere lack of differentiation can explain the fact that fully developed ciliary muscle is lined by fully developed choroid. The relations of structures found at birth were therefore not due to faulty differentiation but to displacement; differentiation and development must have followed their normal course up to a fairly advanced period of foetal life, and the displacement was a displacement of a uveal tract already well formed, in consequence of the gradual bulging of the staphyloma.

It should be remembered also that the anterior chamber is not, on its first formation, a cleft between the cornea and the iris, but between the cornea and the pupillary membrane; the ingrowth of the iris is a later development. If, then, the cornea and the mesoblast posterior to the anterior chamber had failed to differentiate, we should expect an adhesion of the pupillary membrane, not of the iris. That this actually does occur will be demonstrated in my second Lecture. It is impossible to believe that if differentiation had failed the iris would still grow in normally, yet without separating from the cornea; it would remain as a dwarfed stump in the periphery. But in congenital anterior staphyloma the iris though atrophic, is developed to its full length; therefore it must be formed in its normal position and become adherent to the cornea at a later date, in consequence of the perforation of an ulcer.

On structural grounds, then, I think it must be conceded that the hypothesis of non-differentiation fails to meet the facts. Other considerations may also be adduced. In reported cases of congenital anterior staphyloma it has sometimes been noted that corneal nebulae, without adhesion of the iris, were present in the other eye (Collins, Lawson, & Coats). Without affirming that congenital corneal opacities are always of the same nature, one may regard it as certain that they have the same origin in the two eyes of the same individual. Since, however, in the second eye the iris is well formed and in its proper position, the nebula cannot have been due to lack of differentiation between the iris and cornea; it is extremely unlikely therefore that the staphyloma in the first eye had this origin. On the other hand, a perforating ulcer in one eye, and a non-perforating in the other would give rise to exactly the conditions found. An analogous case is that in which some members of a family have been born with anterior staphyloma, and others with corneal nebulae (Steinheim, Krüchow). It may be added that one eye may be staphylomatous and the other apparently phthisical, but I do not lay much stress on this point, because it may be difficult without, or even with, a microscopical examination to distinguish an eye phthisical from perforated ulcer, from an eye microphthalmic from true malformation.

The familial incidence in some of the reported cases is adduced by Collins in support of the non-differentiation hypothesis. The most remarkable instance is Steinheim's, in which, out of a family of six, four were born with either anterior staphyloma or corneal opacities; the occurrence of the disease in brothers is also mentioned by Krüchow and Crampton. Collins thinks it unlikely that intrauterine ulceration should occur in so many children of one family, and implies that this would be more in accordance with the hereditary transmission which is well known in the true malformations. There is, however, as Collins himself points out, no instance of the transmission of congenital anterior staphyloma from one generation to another, nor is it ever associated with undoubted pure malformations in the eye or elsewhere; in

Steinheim's case it is distinctly stated that there was no evidence of hereditary transmission. On the other hand, instances of the transmission of acquired diseases to successive conceptions are not wanting. The outstanding example is syphilis. An interesting case of more localised transmission, and one which bears more directly on inflammations of the eye, is reported by Leber and Addario. The first covering of two healthy goats resulted in a miscarriage; the second in a malformed blind offspring not seen by the authors; the third in a young goat with subacute panophthalmitis in both eyes, from the vitreous of which a diphtheroid bacillus was recovered. In this instance the eyes were affected in two successive conceptions, and in the second of the two at least there was no question of malformation, since microbes were recovered from the vitreous. It will be seen, therefore, that a familial incidence might be due to a general diseased state of the father or mother, or as in Leber and Addario's case, presumably to some localised disease of the uterine mucous membrane, which was without influence on the general health of the mother and yet caused disease in her successive offspring. A familial incidence does not necessarily imply hereditary transmission except in the restricted sense of the transmission by the mother of an infection.

If, then, congenital anterior staphyloma is due to a corneal perforation, how does this perforation come about? We leave facts here and come to pure speculation, but the discussion is not without interest. If the cause is an infective organism only two paths are possible, the endogenous, through the circulation, and the exogenous, through the liquor Amnii. An endogenous origin would accord with the absence of associated conjunctivitis, and would avoid the difficulty mentioned above, that the foetal lids are closed during the latter part of foetal life. One might suppose a deep-seated keratitis of such severity as to lead to sloughing of the cornea. Or, again, the noxa might gain access to the anterior chamber, attack the cornea from behind, and cause perforation from within outwards. Apparent support is lent to this supposition by the pathological examination of some cases of congenital corneal opacity in which extensive defects of the endothelium and membrane of Descemet were present—the condition called by v. Hippel "*ulcus internum corneæ*." There is no evidence, however, that this is ever a spreading perforating process like a superficial ulcer; in congenital cases, indeed, it is doubtful if it is even inflammatory; v. Hippel's case was one of congenital buphthalmos, and in his first paper at least he seems to have mistaken for primary inflammatory defects, the gaps in the membrane of Descemet which are due to rupture from stretching under the high tension. Again, the post-natal forms of deep-seated keratitis, such as interstitial, are associated with inflammatory lesions in the deeper parts of the eye; congenital anterior staphyloma differs from these, and resembles ordinary perforating ulcer in the comparative freedom from inflammation of the deeper-lying intraocular structures. It is impossible to believe that a keratitis so severe as to cause sloughing could be associated with so little intraocular inflammation as was present in my case; such a keratitis, also, would not account for the localised thinning in the centre, while the periphery of the cornea was nearly normal; the fact that the loss of substance was chiefly from the superficial not from the deep layers, has already been mentioned. Similarly, it is impossible to believe that a noxa in the anterior chamber could attack the cornea from behind and cause perforation without at the same time producing severe intraocular inflammation.

With all its difficulties, then, exogenous infection remains the more probable. Before discussing its exact path I should like to make two points clear: (1) that the perforation must occur a considerable time before birth; (2) that

the resemblance of congenital to post-natal anterior staphyloma should not mislead us into assuming that the former, like the latter, must necessarily be associated with maternal vaginitis or infantile conjunctivitis.

(1) That perforation occurs early is proved by the completeness of the fusion of the iris with the pseudo-cornea, and by the high organization of the cicatricial tissue. There is also a recorded instance of congenital anterior staphyloma occurring in a child born four weeks prematurely (Hirschberg and Birnbacher). The centre of the cornea was cicatricial, the iris and pupillary membrane were adherent, the lens was shrunken and the ciliary body was distorted; as the eye was enucleated four hours after birth none of these changes can have been post-natal. The other eye was phthisical and its cornea cicatricial. It is probable that the time of perforation is not the same in all instances, but in this case, at least, it can scarcely have been later than the seventh month, and was very probably earlier.

The early occurrence of perforation may be the explanation of a fact upon which Collins lays stress, namely, that the membrane of Descemet is sometimes—not always—totally absent in congenital anterior staphyloma, whereas some remains of it are always present in the periphery in cases of post-natal perforating ulcer. It may well be, however, that the membrane of Descemet at the seventh month is not so resistant to cellular invasion and solution as it is at birth.

(2) Much unnecessary confusion has been caused by a too close comparison of congenital anterior staphyloma with the anterior staphyloma which follows ophthalmia neonatorum of gonococcal or other origin. At first sight, one is tempted to construct an ascending series beginning with ordinary ophthalmia neonatorum and going on to ante-partum ophthalmia, many cases of which have been described by Sydney Stephenson and Rosa Ford (*THE OPHTHALMOSCOPE*, Vol IV, p. 210, 1906); the next link would be cases in which the child is born with the cornea already perforated (Fuchs "*Die Ursachen und die Verhütung der Blindheit*," p. 115, 1885); and then would come congenital anterior staphyloma in its various stages of development. If this were a true statement of the case, it would be reasonable to ask why, in cases of congenital anterior staphyloma, there is no maternal gonorrhœal discharge, and why there is no conjunctivitis in the infant. As to this last point, even if the gonococcus were the cause, infantile conjunctivitis need not necessarily be expected when the long period between the perforation and birth is taken into account; the fully developed staphylomatous stage in a post-natal perforation is not usually reached till the ophthalmia is dying away or has ceased. From the clinical histories, however, it is quite certain that the gonococcus has no part in the causation of congenital anterior staphyloma, or only in the most exceptional instances.\* But the gonococcus is not the only cause of corneal ulceration; apart from ophthalmia neonatorum it is not even a common cause, and in other forms of ulceration—the pneumococcal, for instance—it is the exception rather than the rule to find the process associated with much conjunctival discharge. Therefore, the frequent absence of maternal vaginitis and infantile conjunctivitis is not surprising. Moreover, a mild degree of both is not so uncommon as is sometimes supposed; leaving out of account Wintersteiner's exceptional case, leucorrhœa, probably not gonorrhœal, is mentioned by Westhoff, and slight mucous discharge from the conjunctiva has been reported in four out of seven cases in which the point is mentioned; there is no instance of profuse secretion.

\* For example, Wintersteiner's case, in which, in presence of vaginal discharge, the membranes were accidentally ruptured one month before delivery.



Coming now to the actual path of infection, there seem to be only three possibilities: (1) the vagina, (2) the uterine mucous membrane, and (3) the placenta.

(1) That microbes can pass up from the vagina even into the unimpregnated uterus, is shown by the occurrence of endometritis, salpingitis, etc., the infection being certainly exogenous in the majority of instances. In the case of ante-partum ophthalmia, also, Stephenson and Ford are probably correct in supposing that the microbes travel upwards, damage the membranes, and so gain access to the liquor Amnii. If the gonococcus can travel in this manner, probably other microbes can also do so. It is true that the spread of the infective agent will presumably be more difficult in the earlier stages of pregnancy, since the os is not patulous, and the cervical canal is filled with a plug of mucus; but probably neither of these conditions offers an insuperable obstacle to the passage of organisms along the mucous membrane. On the other hand, considering the frequency of vaginal inflammations, if this manner of spread were at all common, and if no other factor were necessary, congenital anterior staphyloma might be expected to occur more frequently than it does.

Again, in many of the histories it is very definitely stated that there was no vaginal discharge of any kind; it is difficult to imagine that microbes sufficiently virulent to cause a perforating ulcer of the cornea could spread upwards over healthy surfaces without, at least, producing some inflammation in the mucous membrane. Yet on this point it is to be remarked that the pneumococcus seems sometimes to lie in the conjunctival sac without producing any inflammation, although quite capable of causing an ulcer if it gains access to the corneal stroma.

(2) With regard to infection from the uterine wall, this would require a lesion of the mucous membrane—a localised endometritis, either of exogenous origin from the vagina or of endogenous origin from the blood. Of this there is no direct evidence, and, indeed, any extensive disease of the uterine mucous membrane is excluded both by the absence of symptoms and by the normal course of the pregnancies. But extensive disease is not required; a pyogenic or other microbic focus, however minute, would be sufficient to infect the liquor Amnii, although it might be quite without influence on the health of the mother or foetus. Such a lesion was presumed by Leber and Addario in their case of panophthalmitis in a goat born of healthy parents. In cases of congenital anterior staphyloma, it is very rare to find in the mother any probable source for a metastatic lesion of the uterine mucous membrane; but in one case the mother had suffered from an abscess of the finger at the third month of pregnancy (Collins), and in another the mother was "scrofulous" (Westhoff). Instances are not unknown, however, in which, without obvious cause, the liquor Amnii may be infected—it may be putrid, and it has been found to contain the bacillus coli communis. These cases, however, were not associated with congenital anterior staphyloma.

(3) What has been said about infection from the uterine mucous membrane applies equally to the infection from the placenta. In the case of endogenous foetal infection it is supposed by many authors, and is, indeed, probable, that a lesion of the placenta itself is required in order that the microbes may reach the fetal circulation. But it has been shown that congenital anterior staphyloma is not due to an endogenous infection; therefore we must suppose a lesion of the placenta which breaks through, not into the foetal circulation, but into the liquor Amnii. The reasons for and against such a supposition are the same as in the case of the uterine mucous membrane.



One point which was mentioned above remains to be discussed—namely, the closure of the foetal eyelids from the third month until shortly before birth. There can be little doubt that if the closure were complete an effectual barrier would be offered to the entrance of any microbes present in the liquor Amnii; it is therefore necessary to suppose, at least, a small defect in the fusion; if the defect were very large it seems unlikely that the eyelids would continue to develop normally. The supposition that non-closure of the lids is of importance gains support from the fact that congenital leucoma adherens is nearly always in the lower part of the cornea, *i.e.*, in the palpebral fissure. It may be, indeed, that this is the primary and essential lesion, and it is even possible that given the defective fusion, or a too early solution of it, microbic infection is not required. It is not certain that contact with the liquor Amnii would be indifferent to the developing cornea; on the contrary, it rather seems as if the closure of the lids were a necessary protective measure to prevent such contact. Moreover, the liquor Amnii sometimes has toxic properties: by injecting the fluid from cases of hydramnios, Opitz obtained irritation of the kidneys in animals. It is possible, therefore, that if the eyelids remained open, the corneæ would become ulcerated even without the presence of microbes.

Considering, however, the great structural similarity between congenital anterior staphyloma and the ordinary post-natal ulcerative form, it seems most likely that the process really is microbic, and if patency of the palpebral fissure is also required, the great rarity of the condition is explained, for the combination of infection of the liquor Amnii with non-closure of the eyelids must be very uncommon.

To summarise, then, I believe congenital anterior staphyloma to be due, like the post-natal form, to an ulcer perforating the cornea from without; the process is probably, but not certainly, microbic, and the infection reaches the cornea through the liquor Amnii. Congenital anterior staphyloma is probably the best authenticated instance known of this species of infection. There is no sufficient evidence to show whether the microbes reach the liquor Amnii from the vagina, from the uterine mucous membrane, or from the placenta, or whether the path of infection is always the same. It is necessary to suppose a partial patency of the palpebral fissure.

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## ON THE TREATMENT OF SYMPATHETIC OPHTHALMIA BY LARGE DOSES OF SALICYLATE OF SODIUM, ASPIRIN, OR OTHER SALICYLIC COMPOUNDS.

BY

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I RESPOND the more readily to the invitation of the Editor of THE OPHTHALMOSCOPE to give my views on the subject of the treatment of sympathetic ophthalmia by salicylic compounds, from the fact that if the ophthalmic surgeons of the United Kingdom have shown any appreciation of its importance I have failed to see it reflected in any of their special journals.

In 1899<sup>1</sup>, and again in 1902<sup>2</sup>, I urged the importance and efficacy of very large doses of salicylate of sodium in treating sympathetic ophthalmia. Since my first paper Bane<sup>3</sup>, Campbell<sup>4</sup>, de Schweinitz<sup>5</sup>, Wood<sup>6</sup>, Webster<sup>7</sup>, Baker<sup>8</sup>, and others in America have corroborated my estimate of the importance of this form of treatment; while in Germany, Heuse<sup>9</sup>, and in Sweden, Lindahl<sup>10</sup> and Widmark<sup>11</sup> have reported a similar experience.

By large doses of salicylate I mean that for every pound of body weight the average individual should take 1 grain of salicylate in the 24 hours (that is, for an average man 150 grains a day), and if this does not produce immediate marked improvement, the daily dose should be increased to 200 grains. Unless there is some idiosyncrasy this amount can be given for 4—7 successive days without danger if the patient lies quietly in bed. I usually give 30 grains in two drachms of brandy with half a glassful of water five times a day. According to the severity of the case, I omit the salicylate on one day out of every four to seven days; and when the active signs of the inflammation have disappeared, I give it on two days out of three for two or three weeks longer. With old people, or those with weak hearts, I try to get along with less salicylate.

I recommend this treatment, not only for sympathetic ophthalmia, but as the result of my experience with it in hundreds of cases, in iritis, interstitial keratitis, and traumatic or other infections. I have never seen it do any harm, but have occasionally been obliged to lower the dose or stop it on account of delirium. I am aware that doses of this size are nothing unusual for some internists, and in a recent article, Lees<sup>12</sup> advises 300 to 400 grains a day in acute rheumatism, given with an equal amount of sodium bicarbonate; but among ophthalmologists, even in America, doses of this size have only become common within the last ten years, and among English and Continental oculists I judge that they are very rarely used. And yet everything depends on giving enough. Many cases of ocular infection which show little or no improvement on 120 grs. a day, will show a most astonishing gain on 150 to 200 grs. Before employing large doses of salicylate, my experience with sympathetic ophthalmia was the usual one—nearly all the patients went blind; sometimes in spite of massive doses of mercury. Since 1896, I have treated 16 cases of the disease in this way; I mean of genuine sympathetic ophthalmia

in which after a penetrating wound of one eye, fresh iritic adhesions, deposits on Descemet's membrane, vitreous opacities, and other signs of inflammation showed plainly that the infection had reached the second eye.

Of these 16 cases, one patient first came to me two or three months after the beginning of the disease, with V. = counting fingers, and the inflammation still active. In spite of large doses of salicylate of sodium, energetic inunction etc., the inflammation still persisted after three months' treatment (not seen longer), with vision not improved. Also in a case in which, on account of recurrent delirium, I was afraid to discontinue the large doses of salicylate, the patient left the hospital in decidedly bad condition. Of the other 14 patients, 11 recovered with V. = 20/30 or better; that is, three obtained V. = 20/30; three, V. = 20/20 minus; one, V. = 20/20; four, V. = 20/20 plus. One child was too young to be accurately tested, but the eye was entirely clear and practically normal when last seen. The thirteenth patient came to me a month after the disease had begun and obtained V. = 20/50 with prospects of still further improvement; and the fourteenth obtained only about 20/200 after the extraction of the opaque lens. This was an unusually severe case, the second which I had treated in this way, and I did not push the salicylate to the limit soon enough.

To sum up, since using large doses of salicylate, I have had two bad, one moderate, one good, and twelve very good results. In all cases except one, the first eye was enucleated at the beginning of the treatment. This case obtained V. = 20/50 in the injured eye and 20/30 in the other. One of the patients remained entirely well for eighteen months and then had an attack of glaucoma; this necessitated several operations, and these seemed to stir up the old sympathetic ophthalmia—at any rate, the sight was eventually entirely lost from a combination of the glaucoma with a low grade of inflammation.

With regard to other remedies, it does not follow that because I believe salicylate to be the most important thing, other good things should not be used. On the contrary, I believe that in so dangerous a disease as sympathetic ophthalmia nothing should be left undone which can increase the chance of recovery. Consequently, beside the salicylate and atropine, I start the patient at once on inunctions of mercury; a piece of the salve the size of the patient's thumb being rubbed in every day for a week unless the gums are affected sooner; this is continued for one week out of every three or four; and in the interval between the courses of mercury I give injections of atoxyl, or arsenic in some other form.

It should not be forgotten that if the stomach does not stand the salicylate well, it can well be given by the rectum in doses of 60 grs. in a glassful of warm water, two or three times a day.

It goes without saying that in place of salicylate we can use salicylic acid, aspirin, or some other salicylic compound, although, in my own experience, the chief value of these is to give the patient a change when the salicylate becomes too distasteful. My main point is to insist that in the treatment of sympathetic ophthalmia some salicylic compound should be our sheet-anchor; and that it should be given at once in large doses so as to abort the disease if possible, because one cannot say at the start whether any given case is going to be severe or light. At present the evidence in favour of this plan of treatment is so great that, in my opinion, no patient with sympathetic ophthalmia can be said to have had a fair chance unless he has received it.

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## TWO CASES OF CRYPTOPHTHALMIA.

BY

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The rarity of these cases is my justification for reporting them.

The first case of cryptophthalmia was recorded by Zehender and examined anatomically by Manz (1872). Cases have been recorded since by Hocquart, Chiari, van Duyse (2), Fuchs, Otto, Bach, and Karmann; seven have been examined anatomically. In six cases the abnormality was bilateral; unilateral in three.



Mrs. R., aged 24 years, American, born with the upper and lower lids of both eyes firmly united (ankylo-symblepharon by ankylosis). In every other way she is a perfectly developed woman. An indication of the palpebral fissure in the form of a shallow depression corresponding to the curvature of the lids appears in each eye (Fig. 1). Well-formed eyebrows are present. About



midway between the lower margins of the upper lids and the margins of the orbits are two rows of hairs. At these points there is a slight depression in the surface of the lids—a pitting of the skin.

Patient gives a history of light impressions at an early age. Could recognize when a bright light was flashed in the face. The mother states that when she was two years of age, the left eye was opened by a surgeon, and an imperfectly developed eyeball was found. Four years later the writer and Dr. E. M. Marbourg, of Colorado Springs, opened the lids of the right eye. A small ball was found. It was imbedded in a mass of connective tissue and occupied the nasal side of the orbit. No corneal tissue could be determined macroscopically. Two years after the operation light perception was lost entirely.

There was no history of consanguinity; nor as far back as could be traced, was there a history of any congenital defect.

The patient was educated in the School for the Blind. At 22 years of age, she married an inmate of a workshop for the blind, who had lost his eyes in a mine explosion about five years ago. Their baby, when born, was a duplicate of the mother.

Details of the case follow:

Hazel R., aged 7 months. Baby at birth weighed  $8\frac{1}{4}$  lbs., and was in every other way a perfectly formed child. The tissue at the point of union of the lids had somewhat the appearance of scar tissue, but was probably modified conjunctiva (Fig 2). A few cilia could be seen on the margins of the imperfect



Fig. 2.

lids, more particularly on the lower. There was a partially formed caruncle in each eye. The orbits were slightly narrowed in their vertical diameter, there seeming to be a bulging downward of their superior margins at about the site of the supra-orbital foramina. By palpation, one could determine the presence in each orbit of a small eyeball, but owing to the apparent thickness of the lids, it was impossible to form any estimate of its size. The right,

however, appeared to be the larger. Upon flashing a bright light in the face, there was a reflex movement of the eyelids and a slight wrinkling of the brows. Careful probing along the site of the palpebral fissures failed to reveal any opening at any point.

The right eye was chosen for operation, and an incision was made along the palpebral depression from within outward. There was a complete symblepharon, the upper and lower lids having to be dissected away from what appeared to be a mass of connective tissue. There was considerable hæmorrhage. Retracting the lids and inserting the finger, a small eyeball could be felt. Dissecting away the mass of tissue with the handle of a scalpel, an imperfect eyeball was exposed. In drawing it outward and forward with the forceps, a small point was brought into view which had the appearance of imperfectly developed corneal tissue. The spot was about 2 mm. by 3 mm., and was situated to the nasal side of the globe. No extrinsic eye muscles could be detected macroscopically. By passing a strabismus hook back of the eyeball, the presence of an optic nerve could be determined. In the dissection, the sclerotic was accidentally snipped by the scissors at one point, and some fluid vitreous escaped. There being no possibility of any vision, the lids were closed and the wound was dressed.

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## CLINICAL MEMORANDA.

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### INTERNAL HYDROCEPHALUS AND AMAUROSIS WITHOUT DEFINITE OPHTHALMOSCOPIC CHANGES, FOLLOWING SYMPTOMS OF POSTERIOR BASIC MENINGITIS OR EPENDYMITIS.\*

BY

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The patient, H. H., a boy, was aged  $4\frac{1}{2}$  months when admitted to the German Hospital on October 11th, 1909. He had seemed healthy until eight days before admission, when he commenced to suffer from slight convulsions, spasmodic movements of eyes, and diarrhœa. There was nothing of special interest in the family history, except that a brother of the patient, aged 11 years, suffered from congenital hydrocephalus. Since admission to the hospital the child has seemed almost blind, and has become increasingly apathetic, although at first there was considerable irritability. There have been no convulsions, excepting a slight one when the child was being bathed directly after admission. Decided retraction of the head was at first very noticeable, but is less marked at present. The head has gradually increased in size. Its circumference on November 8th, 1909, was  $18\frac{1}{2}$  in., and on January 24th, 1910, was  $20\frac{1}{2}$  in. At first there was slight fever, but except during three days in January there has been none since October 21st. At present the child is practically blind, though it can perceive a bright light. Ophthalmoscopic examination shows nothing abnormal beyond slight pallor of the optic discs. The child lies quite apathetic in its bed, not moving from

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\*Royal Society of Medicine, Section for the Study of Disease in Children, January 28th, 1910.

the position in which it is placed. It never attempts to catch hold of anything, and does not even put its hands towards the feeding-bottle. It can distinguish between sweetened and unsweetened milk, and can evidently hear a loud, sudden sound. There is often considerable spasticity of the lower extremities, on which occasions (though not always on other occasions) the plantar reflexes are of the extensor type (Babinski's sign).

## LUXATION OF THE EYEBALL.

BY

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ON April 11th, 1908, J. B., an engineer, aged 20 years, came from his work to the Eye Institution, Aberdeen, to have a "fire" removed from his left eye. He was a strong, healthy lad, and presented no abnormal appearance of eyes or skull. A drop of cocaine was instilled, and he was placed on a chair in the usual way, the first and second fingers being used to retract the lids and steady the globe, while the foreign body, which was embedded in the cornea just below the pupil, was being removed. Suddenly, without any unusual pressure being exercised, the eyeball shot forward quite out of the orbit, the lids retracting and closing behind it, so that the whole of its contour could be seen. The patient immediately suffered fairly acute pain, and said he felt sick. I was so much taken by surprise at this strange and novel occurrence that I studied for a few seconds the unusual appearance presented; but the pain experienced by the patient caused me to apply the tips of my thumb and first and second fingers to the front of the projecting globe, and by exerting considerable pressure—a valuable tactile lesson in eyeball tension—I succeeded in pushing the eye back into the orbit. In five minutes the patient had quite recovered, and then the foreign body was removed. The patient remained in ignorance of what had occurred, the Sister-in-attendance having maintained discreet silence.

After the removal of the foreign body the patient's eyesight was as follows:—Right eye  $\frac{6}{6}$ . Left eye  $\frac{6}{18}$  — 1 D. Sph. =  $\frac{6}{6}$ . The disc and fundus generally showed no abnormality. Three days after, the left eye had normal vision ( $\frac{6}{6}$ ) without any lens.

### Remarks.

Such an occurrence as I have related must be rare, as this is my first experience in about 20,000 similar manipulations. It may not be advisable, nor indeed possible, to extrude the eyeball as a deliberate procedure in certain cases; but I can recollect several where it would have been of great value from a diagnostic point of view.

In one case, a large foreign body, measuring  $\frac{3}{8}$  inch by  $\frac{1}{4}$  inch, after passing through cornea, iris, lens, and vitreous, lay embedded at the posterior pole, and had been there, unsuspected by the patient, for six years, without causing any symptoms beyond those directly due to the injury. Its exact position with regard to the globe was determined only after I had taken many skiagrams. These showed that when the eye looked down, the foreign body moved up, and *vice versa*. I should gladly, by deliberate luxation, have explored that pole without the delay and tediousness of X-ray examination. The patient decided to keep his eye and the foreign body,

which, finally, after seeing it in the skiagrams, he admitted was present. I know that eight years after the accident, no bad symptom had appeared, and, so far as I know, the patient still retains the damaged eye fifteen years after the accident.

In gunshot injuries, luxation of the globe would be extremely useful in revealing the presence or absence of counter-puncture, and thus unnecessary enucleations might be prevented.

By means of X-rays I have saved the eye, with good light perception and projection, of a gamekeeper, in whom the pellet entered at the upper and outer corneo-scleral region, passed through the globe, emerged, and got flattened against the inner wall of the orbit, the skiagram showing the flattened pellet. The eye remains quiet, and to some extent useful, seven years after the accident, and has caused no anxiety. In a case like this I can imagine such a manipulation of the globe as I have described capable of saving a deal of mental worry, and also much time\* and trouble. In those cases also, which are fairly frequent, where the pellet pierces the conjunctiva but not the globe, and lies hidden just at or beyond the equatorial region, extrusion of the globe would at once reveal the foreign body.

For several weeks after the occurrence related I attempted luxation of the globe in many cases while removing "fires." In some the slightest extra tension on the lids would have reproduced the phenomenon, but I always stopped short of actual luxation. But, in future, in any case such as those I have instanced, where the end justifies the means, I shall not hesitate to try this novel aid to diagnosis.

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## A MODIFICATION OF THE METHOD OF PERFORMING ADVANCEMENT OF THE TENDON IN STRABISMUS.

BY .

J. AUGUSTUS LEE, M.B., F.R.C.S.E.,

GRAHAMSTOWN, CAPE COLONY, SOUTH AFRICA.

The method I adopt is practically the usual method of performing advancement, with the difference that I use only one tendon suture.

After washing out the conjunctival sac with some mild antiseptic, as boric solution, anæsthetizing with cocaine, and applying adrenalin, I make a vertical incision,  $\frac{1}{16}$  to  $\frac{1}{8}$  of an inch from the corneal margin, through conjunctiva and capsule of Tenon, push the tissues back, exposing the insertion of the tendon: pass one blade of a Prince's forceps underneath the tendon, and the other blade outside the conjunctiva: close the forceps, and so clamp together conjunctiva, capsule, and tendon. I then separate the tendon from its insertion. Next taking a not too fine silk suture, which I have boiling in wax at the time, and which is threaded on a needle, I pass the needle carrying the suture through the conjunctival and sub-conjunctival tissues near the cornea, commencing in a line a little above the upper margin of the tendon, making a running stitch, and finishing in a line a little below the lower margin of the tendon. I then pass the same needle through the conjunctival, subconjunctival tissues, and tendon, commencing a little below the lower margin of the tendon, and finishing a little above the upper margin of the tendon. In passing the needle I make what may be termed a running stitch—going in and out of the

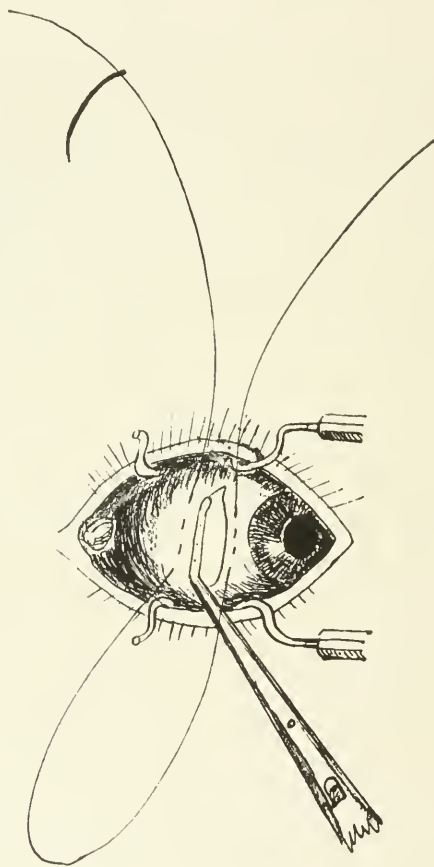
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\* The gamekeeper was shot in Ross, and skiagraphed a fortnight later in Aberdeen.



tissues, not pushing the needle straight through. I then cut off the end of the tendon with the tissues clamped with it immediately behind the blades of the forceps.

I have then the conjunctival and subconjunctival tissues near the cornea, and the tendon, capsule, and conjunctiva in one stitch, which I draw, bringing these parts together, and make a single hitch. I then see if I have got the desired result: if so, I make a second hitch. It may be advisable to put in one or two sutures through the conjunctiva afterwards: but I have not usually found it necessary, as the parts seem to be in close apposition with the one suture.



I claim for this method: that it is easy, expeditious; that the suture holds well if put in in the manner I have described, as the silk lies at right angles to the direction of the tension on the tissues; that having only one suture to manage it is easier to bring the eye into the exact position desired before finally tying the knot; that the parts are less disturbed than by any other method. And not the least advantage of this method is the fact that there is only one suture to take out afterwards.\*

\*The simple method described by Dr. Lee is not altogether new. A very similar plan was mentioned on page 494 of Carter and Frost's *Ophthalmic Surgery*, the second edition of which was published in 1889.—EDITOR.

## NOVELTIES.

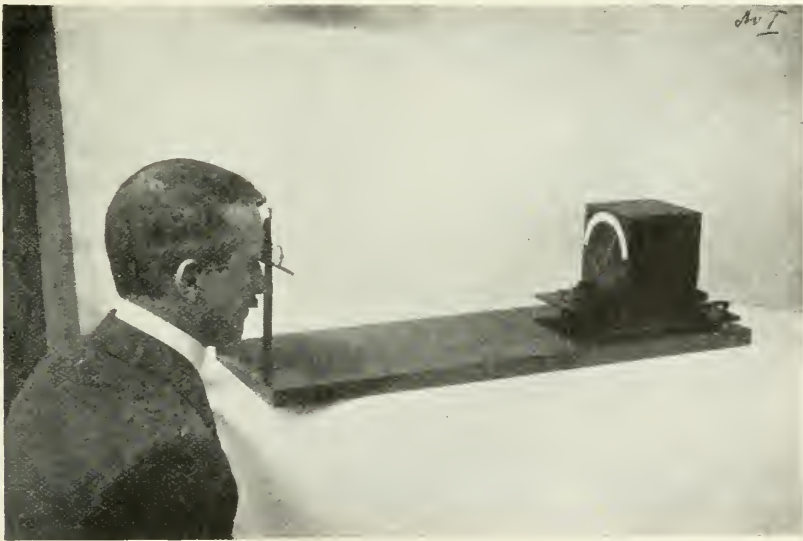
## AN OPTICAL AXIMETER.

BY

J. BURDON-COOPER, F.R.C.S.

BATH, ENGLAND.

The instrument is intended for the precise measurement of the angle of the axis in a cylindrical or sphero-cylindrical spectacle lens. To effect this object advantage is taken of the reflecting quality of the two surfaces of the lens. A luminous streak is rotated by means of a milled head in front of the lens, and the reflections from the two surfaces are observed by the operator. It will be understood that the two surfaces of a sphero-cylindrical lens act as a spherical and as a cylindrical mirror respectively. The property of a spherical or plane mirror is such that at whatever angle the luminous streak is set its reflected image will appear at the same angle, but with a cylindrical mirror,



except in two positions, the reflected image will have a different degree of obliquity from that of the luminous streak in two positions, *viz.*, when the streak is parallel to the axis of the cylinder, and when it is at right angles to it the apparent angle of the image and that of the object will coincide. It is upon these properties of spherical and cylindrical mirrors that the principle of the instrument is based. The apparatus consists of a wooden box fitted with levelling screws, and provided with a lamp by which the streak is illuminated. A milled head at the left hand side of the box rotates the slit, the position of which is read off on the graduated arc in front of the box. The observer places his eye on a level with the top of the box and views the reflections in the spectacles of the patient who is directed to look at the streak. As the luminous streak is rotated two images will appear as crossed lines, and the rotation is continued till the two lines are parallel or come together.

This position, which is read off in the scale, gives the precise angle of the axis of the cylindrical lens. Spectacles or eye glasses may be tested on or off the face. In the former case the box containing the light should be set level, and care should be given to secure the erect position of the patient's face. When not worn, spectacles should be clipped into the holder provided for the purpose and set straight by means of the attached trough. In the figure the photographer has made the mistake of photographing the patient with the glasses in the trough instead of on the face.

The instrument is made by Messrs. C. W. Dixey & Sons, of 3, New Bond Street, and 20, Welbeck Street, London, W.

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## REVIEWS.

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### I.—A QUESTION OF PRIORITY: GUTHRIE v. SAEMISCH.

BY

SYDNEY STEPHENSON,

LONDON, ENGLAND.

The late Mr. George Edward Walker, of Liverpool, was accustomed to maintain that the operation for hypopyon-keratitis which usually goes by the name of a German surgeon, Saemisch, should rightly bear that of a British surgeon, G. J. Guthrie.\* The same view has also been voiced by Mr. G. E. Walker's son, Dr. A. Nimmo Walker, of Liverpool (see *THE OPHTHALMOSCOPE*, 1909, p. 741).

The recent death of Professor Th. Saemisch has once more brought the question of priority to the fore. Most of the obituary notices of the late professor spoke of him as the originator of the operation. It seemed worth while to the reviewer, therefore, to examine into the question. His investigations leave no doubt that the operation nowadays commonly known as "Saemisch's method" or "section" was originated by Guthrie, who published his observations 27 years prior to Saemisch.

Contrasted below, by means of what someone has aptly called the "deadly parallel," are the words of the two writers:—

G. J. GUTHRIE.

*Medical Times*, October 28th, 1843.

[p. 47.] "When, however, a perpendicular incision is made completely through the centre of the abscess, beginning a little below its lower and is carried out a little beyond its upper edge, the operation is successful. The aqueous humour is suddenly evacuated, together with the matter constituting the onyx or hypopium, and what is of more importance, it brings out with it the

TH. SAEMISCH.

*Das Ulcus Corneæ Serpens*, 1870.

[p. 12] "The method employed by me, carried out as early as possible, consists in slitting the base of the ulcer across its entire breadth and in continuing the incision beyond its edge into the healthy tissue on each side, and in keeping open the slit until such time as cicatrisation of the ulcer commences."

[p. 14] "The little operation is performed

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\*George James Guthrie, the descendant of an ancient Forfarshire family, was born in 1785 and died in 1856. He served with the 29th regiment in Canada and the Peninsula, where he gained the special commendation of the Duke of Wellington. On his return to England he lectured upon surgery at the Military Hospital, which formerly stood near the present Eaton Square. In December, 1816, Guthrie founded an institution for the treatment of diseases of the eye, now known as the Royal Westminster Ophthalmic Hospital. He also held the post of surgeon to the Westminster Hospital. Guthrie was a voluminous writer upon ophthalmic, as well as upon general surgical subjects.—EDITOR

viscid matter lying between the layers of the cornea, and which no one has yet been able to remove successfully by any manipulation whatever. The iris falls against the inside of the cornea and closes for the time the opening thus made. If the whole of the aqueous humour should not have been let out, together with the matter constituting the hypopium, the edges of the wound in the cornea must be separated by the small, thin, flat blunt silver instrument attached to the opposite end of the curette used sometimes during the operation for extracting a cataract or by any similar instrument of a somewhat similar kind, and care must be taken during the operation of dividing the cornea, that the capsule of the lens shall not be injured. After the complete evacuation of the aqueous humour and the contents of the abscess, the eyelids should be closed, and a soft pad of linen placed upon them with a moderate degree of pressure for twenty-four hours, and then it is only to be removed and replaced for the purpose of cleansing the edges of the lids, which are not to be opened for eight-and-forty hours, when, in some instances the edges of the incision will be found to have united, and the anterior chamber to be full of aqueous humour, the ulcerated part in a healthy state, and all the other symptoms greatly relieved; the cure, in fact, goes on to its completion in ordinary cases, and will do so in most others, without further intervention on the part of the surgeon, although it may be expedited by his assistance. It matters not in what part of the cornea the abscess is situated as far as regards the incision, which must always be made in the same manner."

*Medical Times*, 9th March, 1844, (p. 409).

"The operation I recommend in these cases is not a puncture. It is a division of the cornea, made perpendicularly through it by the best cataract knife you have, beginning immediately below the edge of the interstitial abscess, and extending to a similar point above it, the internal opening in the cornea being as nearly as possible as large as the external one.

The whole of the aqueous humour and other matters should be suddenly discharged, when the iris falls or is pressed forward against the cornea. Care must be taken not to injure the capsule of the lens."

with the patient lying down, without narcosis. The lids are fixed by means of the elevator, and the globe is steadied by fixation forceps applied to the upper or lower edge of the cornea. For the slitting I employ von Graefe's narrow knife, which is admirably adapted for the purpose. The section is now made in such a way as to run crosswise over the base of the ulcer, if possible through that part of the edge which, as compared with the remainder, is more severely swollen and opaque. The puncture and the counter-puncture are to be disposed accordingly, and for the sake of convenience it is recommended that the former be made on the temporal side. The point of the knife is pushed into healthy corneal tissue at a distance of about 1 mm. from the margin of the ulcer right into the anterior chamber and is slowly pushed on with a gentle turning backwards of the handle behind the ulcer, towards the base of which the edge of the knife is directed, in order to reach a spot for the counter-puncture directly opposite to the puncture close to the edge but outside the ulcer itself. The point of the knife accordingly emerges through healthy tissue. The diseased part of the cornea now lies, as a rule, with its greatest dimensions upon the edge of the blade . . .

. . . By saw-like movements of the blade the tissue is slit. This slit calls for prudence in several directions. Especially is the sudden evacuation of the contents of the anterior chamber to be avoided. On this account, in order to avoid any kind of pressure, the fixation forceps are laid aside after the counter-puncture has been made, and in dividing the tissues, the knife is often turned a little on its long axis, so that the aqueous humour can ooze out of the wound by the side of the blade, and care must be taken to divide the rest of the tissues still lying in front of the knife as slowly and as carefully as possible. As a rule, this happens after complete evacuation of the anterior chamber has occurred. . . .

. . . The patient continues to lie down for some hours after the operation, for ciliary neurosis usually comes on immediately after the section, even if the aqueous humour oozes slowly out, and this disappears rapidly if complete rest be observed.

No pressure bandage is applied to the eye, which is merely covered with light compresses. In an hour, or even sooner, the wound has become closed, so that atropine acts. This medicament is instilled in doses suitable to the condition of the iris. It is surprising to observe how the spread of the ulcer is hindered by the section. . . .

. . . For re-opening of the wound, which at first is repeated, as a rule, twice daily, I employed Weber's canaliculus knife . . . or a fine stylet . . ."



## II.—AN ULTIMATE THEORY OF COLOUR PERCEPTION, AND TOUCHING UPON GLARE.

BY

A CASUAL CORRESPONDENT.

ALL present theories of colour perception terminate in the region of psychical phenomena.

Dr. Edridge-Green, in "*Colour Blindness and Colour Perception*," describes the factors of colour perception in outline only as :—

1. The physical stimulus.
2. The sense organ receiving the stimulus.
3. The nerves conveying the effects of the stimulus.
4. The centre of memory receiving the whole impression.
5. The perceptive centre conveying to the mind information concerning individual portions of the impression.

The difficulty in this and in other theories is to account for certain phenomena concerned in perception except in assuming psychical relation. There is a need for a more precise theory of detail, and an attempt is now made to elucidate the problems subsequent to external impressions.

The visual purple ably dealt with by Dr. Edridge Green is a primary factor in matters relating to colour or light perception and may be taken as a reducible medium acted upon by outside influences more or less, dependent upon the frequencies of individual portions of the projection. Probably in conjunction with other media and under the reducing agency of other media the visual purple transforms these frequencies into others appreciable in subsequent action and conveyable by the nerve fibres distributed in and about the fovea.

It must be assumed that the nerve fibres are simple means of conveyance, and the proof of this communicating character and the resolving power of the visual purple can be demonstrated by examining a small aperture of red light in an Edridge-Green lantern. On gazing steadily at this point of light it will be seen to travel upward, which is doubtless due to the falling of the visual purple. The transformed impulses in passing over the nerve endings transmit through each in turn, and, produce the appearance of the upward movement of the light.

The nerve fibres communicate to a number of nerve cells and the theory is that these cells have an individual frequency consequent upon life and capable of synchronising with impulses of like rate which may be communicated from external sources. Let these be called synchronising cells.

The growth, or evolution of these cells in the cases of certain individuals may reach that stage where many more different frequencies may be appreciated than in others, and it is argued that this phenomenon accounts for the higher perceptive faculty. It may be that in the case of a dichromic the appreciation is limited to frequencies about the red and violet regions of the spectrum and so on with regard to other condition of colour perception.

The same principle may apply to other perceptive faculties.

To complete the theory now briefly described another function of a co-ordinatory nature must be assumed. By induction or sympathy other cells, probably in the so-called nerve centre, index and locate the receptive and appreciating function of the synchronising cells.

The definition of glare is sought by what is practically a committee of experts in lighting, and in relation to this theory the definition should be somewhat as follows :—An excess of the component parts of light which

confuse by reason of overlapping, and which are unappreciated in detail by the color sense.

It is necessary, in order to provide a definition, to examine the details of the light sense function, and also deal with the question from the theory of colour perception.

It must be admitted that the greater the light the larger number of monochromatic component parts received by the visual purple and communicated. Many of these must overlap the appreciable monochromatic component parts as determined by the synchronising value of the cells in the individual, and therefore a sudden crowding of impulses beyond the appreciation in detail or in harmony must confuse. The compound character of the light also calling for a more than normal active resolution by the visual purple adds to the discomfort.

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## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

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### I.—COMPARATIVE PHYSIOLOGY.

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- (1) **Hess, Carl.**—The accommodation in diving birds. (*Die Akkommodation bei Tauchervögeln.*) *Archiv. f. vergleichende Ophthalmologie*, I Jahrgang, II Heft, S. 153.
- (2) **Boden, Rudolf.**—On the refraction of the dog's eye. (*Ueber den Refraktionszustand des Hundeauges.*) *Archiv. f. vergleichende Ophth.*, I Jahrgang, II Heft, S. 195.

(1) A problem of much interest is presented by the accommodation of diving birds. The pursuit of their prey they must be guided, first, by distant vision in air, and, then, within a few moments, by near vision under water, and inasmuch as the cornea is eliminated as a refracting surface as soon as the animal is immersed, it is evident that an enormous effort of accommodation becomes necessary. Under like conditions the human eye would require some 40 additional dioptries. From the manner in which a cormorant, for instance, twists and turns after the fish swimming in its tank, it is obvious that it really is guided under water by its vision.

In the present paper **Hess** has set himself to prove that the required amount of accommodation actually takes place, as well as to study its mechanism. By retinoscopy he finds that the refraction of the cormorant's eye at rest is emmetropic, or slightly hypermetropic; with electrical stimulation, or under nicotin, it is between 40 D. and 50 D., so high an amount being naturally difficult to determine with precision. As compared with this, night birds have 2 D. to 3 D. of accommodation, hens and pigeons 8 D. to 10 D., man (in childhood) 14 D. to 16 D. If the eye of the cormorant be observed during stimulation it is found that the lens projects through the pupil in the form of an anterior lenticonus, the pupil first contracts for a moment and then dilates, the iris is thrown into a number of folds concentric with the pupillary margin, and a white rim appears in the periphery, due to great stretching of the ciliary attachment.

The exact mechanism of these changes was studied by dividing the fresh eye equatorially, and directly observing, with strong illumination, the behaviour of the reflection images, and the changes in shape of the lens, under stimulation. Hess also succeeded in fixing eyes, in the resting and stimulated states, in formalin. The changes which occur are as follows.—The ciliary muscles and the tensor choroideæ pull the tissues of the ciliary body towards the equator of the lens, and so loosen the attachment of the iris root, and allow it to become displaced a little over the front of the lens, towards the antero-posterior axis of the globe. The anterior ciliary processes also rest normally on the anterior surface of the lens and are displaced inwards at the same time. By the contraction of the iris musculature the anterior surface of the lens is now compressed, and that portion of it which corresponds to the pupil is driven forward in the form of a cone. The pupil at first contracts, but as the lenticonus is pushed through it the pupillary border is thrust back, and the adjacent iris is thrown into concentric folds. The posterior surface of the lens undergoes no change. This mechanism is found in all birds and in many reptiles; in the divers, however, it is brought to a great degree of perfection, and this is due especially to the softness of the lens, which makes it more plastic, to the great development of the muscles of the iris and ciliary body, and to the laxity of attachment of the inner layer of the ciliary body.

It will be seen that Hess believes the accommodative mechanism of birds to be wholly different from that of mammals. It seems to the reviewer that there is a large amount of evidence of the truth of this view. The structure of the ciliary body in the birds is very different, the muscles are voluntary, and are differently distributed, the lens has no nucleus, and has, at its equator, a peculiar structure, the "ring swelling." The large part in the accommodation which Hess attributes to the iris is undoubtedly proved by the great development of its musculature in the diving birds. From his own observations, the reviewer can confirm Hess's statements on this point; the hypertrophy is far beyond anything which can be required for the movements of the iris itself, and is much more marked toward the root; of the ciliary muscles it is the tensor choroideæ which is chiefly developed, the other muscles being below rather than above the average in size. The present paper gives only one division of Hess's researches on the accommodation of animals, but it is certainly not the least interesting.

GEORGE COATS.

(2) In this long and discursive paper the reader will find much information not only about the refraction of the dog, but also about that of other animals. It was formerly supposed that nearly all animals were hypermetropic. It seems, however, that about 30 per cent. of horses are myopic, and it has been surmised that "shying" may be due to a refractive error. Cattle are usually myopic, especially if kept closely stalled. Birds are hypermetropic, reptiles slightly hypermetropic, fish myopic, and cephalopods myopic. In his estimations on the dog, **Boden** used the method of Schmidt-Rimpler in which the image of a grating is cast into the eye and observed on the fundus by the indirect method; the image can only be sharp when the source of light and the fundus are at conjugate foci, and inasmuch as the position of the source is known, the focus of the eye can be calculated. The observational error of the method is about 1 D. 194 eyes of 100 dogs were observed with and without atropin. They were invariably found to be myopic, from 1.5 D. to 6 D. Controls by retinoscopy and direct estimation gave 0.5 D. to 1 D. less. Boden calls the lesser degrees of myopia "Dog-hypermetropia" and the medium degrees "Dog-emmetropia"—surely a flagrant confusion of terms. Dogs accustomed to an open-air life were less myopic than house-dogs. The difference of refraction with and without atropin was variable and



not great. Boden tried the effect of correcting the myopia by means of lenses fitted on a specially contrived nozzle. We fear there is no money in the idea, "the animal" we read, "stood motionless, as though bemused," it "looked here and there in astonishment," its jump over a stick was a failure, and, finally, worst of all, when the glasses were removed it "rubbed its eyes." The paper contains many interesting facts, but it could have been much compressed without disadvantage. It seems superfluous to give, in ten pages of tables, the figures of every separate observation; a well considered grouping and analysis should have answered every purpose.

GEORGE COATS.

## II.—COMPARATIVE PATHOLOGY.

- (1) **Krusius, Franz F.**—On an infective ophthalmitis, with gas-formation, in fishes. (Ueber eine infektiöse Aerophthalmie bei Fischen.) *Archiv f. vergleichende Ophth.*, 1 Jahrgang, II Heft, S. 165.
- (2) **Pichler, Alexius.**—Spontaneous glaucoma (hydropthalmos) in the rabbit. (Spontanes Glaukom [Hydropthalmus] beim Kaninchen.) *Arch. f. vergleichende Ophth.*, 1 Jahrgang, II Heft, S. 175.
- (3) **Lohlein, Walther.**—Disease of eyelids of rabbits from infection with *Sarcoptes minor*. (Die Liderkrankung der Kaninchen bei Infektion mit *Sarcoptes minor*.) *Arch. f. vergleichende Ophth.*, 1 Jahrgang, II Heft, p. 189.

(1) In this paper **Krusius** investigates a peculiar disease of fishes characterised by the formation of gas in the orbital tissues and eye. The primary seat of the disease seems to be the orbit, whence the gas spreads forward under the skin, and through the loose tissues of the corneo-scleral junction into the anterior chamber. Krusius proved experimentally that when air or perhydrol was injected into the orbit, a similar passage of gas into the anterior chamber occurred. No gas forms behind the lens, the media remain clear, there are no signs of inflammation, some vision is preserved, movements remain free, and the tension is not raised. Most often the affection is unilateral. The eye becomes much enlarged and finally bursts, and the fish often dies with signs of a general disease. The gas contains 27.5 per cent. of oxygen. In smears from the orbital tissues Krusius found a small, short, plump, flagellated, non-capsulated bacillus. Cultures were negative, but an emulsion from the orbital tissues, injected into another fish, reproduced the disease. Infection is supposed to occur through the food, and cures have been effected by partial starvation.

GEORGE COATS.

(2) **Pichler** observed primary glaucoma in the right eye of a young, healthy, albinotic rabbit. The globe was enlarged, the anterior ciliary vessels were congested, the cornea was dull and œdematous, the anterior chamber very deep, the pupil large and sluggish. The other eye was normal. Without treatment, the condition improved to a certain extent, and came to a stand-still, with tension full and with excavation of the disc. No pathological examination was made, owing to accidental loss of the specimen.

Instances of primary glaucoma have been reported in fishes, and in the dog, horse, rabbit, and tiger. It appears that in animals the disease always corresponds to the juvenile or buphthalmic type in man, with enlargement of the globe, deepening of the anterior chamber, etc.; owing to the extensibility of the sclera and cornea, excavation of the papilla is not necessarily present



A similar condition has been produced experimentally by Erdmann in the dog. After a somewhat arid discussion on the general aspects of the question, Pichler comes to the conclusion that the glaucoma is due, as in man, to defective development of the drainage apparatus.

GEORGE COATS.

(3) **Lohlein's** paper is a study of a parasitic disease, "*Kopfräude*" or "Head-scab," which affects the eyelids of rabbits. Dirty grey-white scabs and crusts surround both eyes in the form of a ring. In later stages, the disease may attack the nose and lips, but it very rarely spreads beyond the head. Neither the conjunctiva nor the other mucous membranes are affected. If the disease is untreated, the animal becomes thin and dies without any characteristic lesion of the internal organs. The affection is allied to human scabies, and is due to a specific parasite, the *sarcoptes minor*, which is found in large numbers in the crusts. Microscopically, the papillæ of the skin are found congested and infiltrated, and the epithelium is irregular, greatly thickened, and desquamating. The burrows of the parasite are found in the epithelium only. In the occurrence of hyperkeratosis the disease differs from human scabies, but it is not improbable that the difference is really due to the fact that the *sarcoptes minor* causes little itching, so that the crusts are not scratched away. Hyperkeratosis sometimes occurs in human scabies when it attacks anæsthetic parts, as in leprosy.

GEORGE COATS.

### III.—THE SURGICAL TREATMENT OF GLAUCOMA.

- (1) **Ohm, J.**—**Glaucoma and cyclodialysis.** (Glaukom und Cyklodialyse.) *Centralbl. f. prak. Augenheilk.*, Dezember, 1909.
- (2) **James, Brooksbank.**—**Glaucoma, treated by irido-sclerectomy (a new method).** *Trans. Ophth. Society U.K.*, Vol. XXX, Fasc. I, 1910, p. 30.

(1) **Ohm**, of Bottrop, records three cases of glaucoma treated by cyclodialysis, all of which were improved by the operation.

The first case, in a man 38 years of age, was first seen in 1908. Twenty years previously the right eye had glaucoma and was treated by iridectomy—which for the time relieved all the symptoms. The left eye went blind in 1902 as the result of a contusion. In 1908 the right eye began to be painful, and the vision to deteriorate, until, when first seen in December, 1908, it equalled fingers at  $\frac{1}{2}$  m., and the lens was displaced into the anterior chamber. This was removed and vision improved, but two months later glaucoma-symptoms again appeared, and so another iridectomy was performed. This had no effect, and as the field of vision was rapidly becoming smaller, a cyclodialysis down and out was performed, since when (9 months) the eye has remained quite well and vision with correction = 6/10.

The second case, a woman, aged 71, was first seen in June, 1909, with beginning glaucoma in both eyes. A brother had suffered from the same disease, and had had iridectomies in both eyes, and had gone completely blind. On this account iridectomy was not performed on this patient, but cyclodialysis was done on both eyes, with an interval of a fortnight between the two, and in both eyes the result was excellent.

The third case, a man, 36 years of age, suffered a perforating injury to his right eye in October, 1908, which healed up, but the eye became blind. In January, 1909, the left eye became very painful and vision dim. The

right eye was immediately enucleated, and the patient treated by inunctions and atropine. In February, 1909, this eye had become better, but there was an almost complete ring synechia, tension normal and vision 5/30. During the summer he had two or three painful attacks, and in August the lens began to become opaque. In November the tension was high, the synechia complete, the lens opaque, and projection only outwards and down and out, iris atrophic. An attempt at iridectomy was made, and although a bit of the iris was torn out, the operation remained without result, and therefore a cyclodialysis was performed, and in the course of the following fortnight all the pain disappeared, the tension became normal, and the eye lost all its appearances of inflammation.

In view of these cases, the author is of opinion that cyclodialysis is of distinct service in many instances. A. LEVY.

(2) **James**, of London, reports three cases of glaucoma (one acute and two chronic), where a good result was obtained by irido-sclerectomy, performed by what he describes as "a new method." The novel point consists in turning back a flap of conjunctiva, and incising the anterior chamber, from without inwards, with the point of a Beer's knife. The method is essentially similar to that introduced many years ago by Gayet, of Lyons, and recently advocated by M. Dufour, of Lausanne, and recommended by both the authors named in cases of difficult iridectomy (see *THE OPHTHALMOSCOPE*, 1909, p. 530). As to the rest of James's operation, it merely consisted (in the two chronic cases) in excising a piece of sclera from the wound, either with curved scissors or a small punch. SYDNEY STEPHENSON.

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#### IV.—AMAUROSIS IN TYPHOID FEVER.

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- (1) **Grimaldi, E.**—Bilateral transient amaurosis after typhoid fever. (*Amaurosi bilaterale, transitoria, post-tifica.*) *Il Tommasi*, Anno I (1906), No. 33.
- (2) **Widal, Joltrain, and Weill.**—Sudden development of amaurosis in typhoid fever. *Société Méd. des Hôpitaux de Paris*, 30 juillet, 1909, reported by *Lancet*, September 18th, 1909.

(1) In a child of two years affected with typical typhoid fever having lasted three weeks, blindness rapidly became absolute. The amaurosis lasted for a week, and was followed by gradual recovery. The pupillary reactions were perfectly kept, and the ophthalmoscopic examination failed to reveal any lesion of the papilla, the macular region, or the other parts of the retina. **Grimaldi** attributes the passing amaurosis, which came on at the beginning of convalescence from typhoid fever, to a toxic disturbance of the visual area of both sides of the brain. A. ANTONELLI.

(2) **Widal, Joltrain, and Weill** attended a patient suffering from typhoid of ordinary type. He was aged 20 years, and had no previous history of visual disorder. On the ninth day of the illness, during which there had been no sign of meningeal irritation, the sight was found to be lost on awaking from sleep. The pupil reflex to light was abolished. The onset was so sudden as to suggest hysteria, but examination showed bilateral œdema of the papilla with marked venous dilatation. Lumbar puncture allowed the escape of a clear fluid at very high pressure not containing either albumin or cells. After two days, sight had improved, the papillary œdema almost disappeared,

although venous dilatation remained. A second lumbar puncture resulted in complete restoration of vision and normal fundi. The authors drew attention to the distinction between the amaurosis of hysteria and lead poisoning which are associated with high arterial pressure, and the amaurosis which may show itself in the course of an infectious disease like typhoid fever. This latter form is due to papillary œdema, with increased pressure of the cerebro-spinal fluid.

ERNEST THOMSON.

## V.—THE SPIROCHÆTA PALLIDA.

Hoffmann, Erich.—The ætiology of syphilis. (*Die Aetologie der Syphilis.*) *Dermatologische Zeitschrift*, November, 1909. Ref. in *Medical Review*, March, 1910.

This communication, read by Hoffmann, of Halle, at the XVI International Medical Congress at Budapest on August 31st, 1909, is now reported in abbreviated form in the *Dermatologische Zeitschrift*.

The summary of recent advances in our knowledge of the spirochæta pallida by Hoffmann, who collaborated with the late Dr. Schaudinn, deserves the earnest attention of every ophthalmologist.

It is now known that the spirochæta pallida does not possess lateral flagellæ, and that the long terminal filaments have not the significance of bacterial flagellæ. The "rolled-up" forms which have been described, possibly represent a resting-stage in the life-history of the organism. In the spleen of a congenitally syphilitic infant, Hoffmann was able to trace every gradation between this variety and the typical cork-screw organism. In the tissues spirochætes are usually extra-cellular and occur in the lymph-spaces and connective tissue. But they may also be found in parenchymatous and connective tissue cells and in leucocytes. This suggests that phagocytosis plays a part in the destruction of spirochætes, but as they are motile organisms, active penetration of the cells cannot be excluded. Their biological behaviour, and especially their extreme flexibility, place them among the protozoa rather than bacteria, though possibly they form a connecting link between the two.

Hoffmann prefers the original name *spirochæta pallida* to that finally chosen by Schaudinn—*treponema pallidum*. Schaudinn's grounds for regarding the organism as a species distinct from the spirochætes are not convincing. The *pallida* is not the only spirochæta which possesses terminal filaments, and further research is required to show the importance or otherwise of the comparative constancy in the number of convolutions, the round traverse section, and the absence of an undulant membrane.

Attempts to cultivate the spirochæta pallida outside the body have invariably failed until quite recently. Mühlens, using a specially prepared horse-serum (Schereschewsky's medium), obtained from a syphilitic inguinal gland a pure culture of a spirochæta, indistinguishable from the pallida. Afterwards the organism was propagated on horse-serum-agar for many generations. But as all attempts to produce syphilis by inoculation from these cultures proved unsuccessful, it is doubtful whether the organism grown was the spirochæta pallida or one closely resembling it. Possibly, the spirochæta pallida when cultivated on artificial media loses its virulence. This view is supported by Metschnikoff's observation that syphilitic material in a few hours loses its virulence outside the body—long before the spirochætes have



lost their motility. In this case Mühlens's cultures might represent an avirulent modification of the virulent spirochæta.

Hoffmann regards the spirochæta pallida as indisputably the cause of syphilis; the evidence is just as conclusive as is that in favour of the leprosy bacillus, the malarial parasite, the spirochæta of relapsing fever, and other hitherto uncultivated organisms. It has been regularly found in thousands of cases in the infectious stages of acquired, congenital, and experimental syphilis. It occurs in the circulation both in adults and in infants suffering from hereditary syphilis; in the latter it is also present in large quantities in practically every organ in the body. In the primary lesions of experimental syphilis in animals it also occurs. On the other hand, it is regularly absent in non-syphilitic subjects. In the later stages of syphilis it is present, though usually in small quantities, if experimental inoculation shows the persistence of infectivity—but not otherwise. Siegel and his school have claimed that the spirochæta pallida is a saprophyte which finds a favourable soil in syphilitic tissues, and that the "organisms" demonstrable by the silver-method are spirally arranged tissue elements. But these views have been repeatedly disproved. Of special interest is the discovery by Reuter and Schmorl of the spirochæta in syphilitic aortitis and osteochondritis, and by Pasini, in the dental germs of the incisor teeth of syphilitic fetuses—a fact which probably accounts for Hutchinson's teeth.

The diagnostic importance of the spirochæta pallida has not been lessened by the successful application of Wassermann's reaction (fixation of the complement). Early primary sores, which might otherwise be taken for simple herpes, are recognizable by the discovery of the spirochæta with certainty. The prophylactic value of this is self-evident. In latent stages the organism may frequently be found by puncture of the lymphatic glands or by scraping the surface of the tonsils. The demonstration is easy by the improved staining methods now employed, or by reflected light with Reichert's condensor (as used for opaque objects), or by Zeiss's ultra-microscope. Recently Burri has introduced a method which gives good results in the absence of a condensor or ultra-microscope, though having the disadvantage that the organisms do not display their characteristic movements. One drop of Grübler's Indian ink, diluted 1 to 9, is intimately mixed with a drop of suspected secretion or emulsion of old dried material and spread in a thin film on a slide. Rapid examination during the process of drying with an oil-immersion shows the spirochætes as white threads on a black ground. A diagnosis can be made by one of these methods much more rapidly than by the complicated serum-test. The spirochæta pallida is sufficiently distinctive not to be mistaken for other spirochætes or for spirally coiled tissue-elements. The discovery of the spirochæta is the only conclusive evidence as to the nature of a doubtful local lesion, and a positive serum-reaction merely indicates that the individual has been at some time infected with syphilis. During the first six weeks after infection, only about 17 per cent. of all cases give Wassermann's reaction, and between the sixth and ninth week only about 61 per cent. During the later stages the re-action is obtainable in about 95 per cent. Then the spirochætes are few and difficult to find, and Wassermann's reaction gives the more trustworthy results; in the earlier stages the discovery of the spirochæta is more easy and reliable. Wassermann's reaction is especially useful in para-syphilitic affections, such as locomotor ataxy and general paralysis. Hence the two methods supplement each other.

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## VI.—TUBERCULOUS TARSITIS.

**Aurand.**—Tuberculous tarsitis. *La Clinique Ophthalmologique*, 10 décembre, 1909.

**Aurand** (Lyons) describes a case of tuberculous tarsitis, refers to the very scanty literature, pleads for the recognition of the condition as a clinical entity, and discusses the differential diagnosis.

A man of 30 years had had redness and swelling of the right upper lid for a month. Treated with yellow oxide ointment, the swelling increased, and became complicated with muco-purulent conjunctivitis. Eight days later, a painless swelling of the preauricular gland came on. Aurand then saw the case. The eyelid was red and swollen in its outer half. It was thickened and hard to superficial palpation in its whole length, and had less elevating power than the lid of the other eye. Holding the eyelid between the fingers to evert it caused no pain, but the tarsus seemed distinctly thickened and indurated, and presented near the middle of its conjunctival surface an irregular-edged greyish ulcer, 4 mm. by 2 mm., round which were scattered about a dozen grey granulations. The palpebral conjunctiva was red and velvety; the bulbar conjunctiva and cornea were intact. The preauricular swelling was the size of a pigeon's egg, fluctuant, and quite painless. The skin over it was normal and non-adherent. The submaxillary and submental glands were normal. There was a distinct family history but no personal history pointing to tuberculosis. Aurand made his diagnosis of tuberculous ulceration of the conjunctiva from the foregoing facts, and considered that the lid condition represented a true secondary tuberculous tarsitis. Under general treatment, combined with deep application of the galvano-cautery and iodoform locally, the whole disease cleared away in a month and did not return.

Admitting that conjunctival tuberculosis in its various forms is well-known, the author points out that tuberculous tarsitis is hardly mentioned in the most recent text-books. Rollet, in 1905, first "individualised" this localization of tuberculosis, and showed that it should be considered a true clinical entity characterised by ptosis, palpebral hyperplasia *en masse*, and lymphatic gland engorgement (*Société française d'Ophthalmologie*, 1905).

Tuberculous tarsitis may be secondary to tuberculosis of the conjunctiva (Rollet, Aurand), of the skin (Rollet) and, possibly, of the Meibomian glands. It is a diffuse infiltration of the whole tarsus, painless, unilateral, occurs in relatively young subjects, and always causes adenopathy—submaxillary, submental (Rollet), or preauricular (Aurand). It has to be differentiated from syphilitic tarsitis, Parinaud's conjunctivitis (voluminous painful adenitis), amyloid degeneration following trachoma (usually bilateral and without adenopathy), Meibomian epithelioma (patient is aged), and from inflamed chalazion with conjunctival ulcer.

ERNEST THOMSON.

## VII.—SYMPATHETIC DISEASES.

- (1) **Bailliart.**—Sympathetic ophthalmia. *Bull. Général de Thér.*, 23 novembre, 1908.
- (2) **Cusner.**—Retro-bulbar leaden pellet: sympathetic ophthalmitis: iridectomy of the exciting eye: combined extraction of the sympathizing eye: cure. *Société belge d'Ophthalmologie*, 25 avril, 1909.

- (3) **Fuchs, E.**—On ophthalmia sympathetica. (Ueber Ophthalmia Sympathica.) von Graefe's *Archiv f. Ophthalmologie*, 11 Mai, 1909, Bd. LXX, Heft 3.
- (4) **Oliver, Charles A.**—Clinical and pathological study of transferred ophthalmitis. *Ophthalmology*, July, 1909.
- (5) **Alt, Adolf.**—Melanoma of the iris, adenoma-like tumour in ciliary body, and enormous ossification of the choroid in an eye removed on account of sympathetic irritation of its fellow. *American Journal of Ophthalmology*, September, 1909.
- (6) **Meller, T.**—Intra-ocular sarcoma and sympathizing inflammation. (Intraoculares Sarcom und sympathisierende Entzündung.) von Graefe's *Archiv f. Ophthalmologie*, 5 September, 1909, Bd. LXXII, Heft 1.
- (7) **Marsilla.**—The value of enucleation in the treatment of sympathetic ophthalmia. (Valor de la enucleacion en la tratamiento de la oftalmia simpatica.) *Archivos de Oftalmologia Hisp.-Americanos*, September, 1909.
- (8) **Trousseau, A.**—The cauterisation of hernias of the iris and sympathetic ophthalmia. (La cautérisation ignée des hernies de l'iris et l'ophtalmie sympathique.) *Archives d'Ophthalmologie*, novembre, 1909.

(2) **Cusner**, of Brussels, showed a patient whose left eye had been wounded some years before by a leaden pellet. On ophthalmoscopic examination, a cicatricial lesion was found at the level of the macula, bearing testimony to the exit of the projectile and to its passage into the orbit. Inflammatory phenomena were not marked at the moment of the accident. Seven years later, however, the patient was attacked with irido-cyclitis of the other eye, believed by the author to have been of sympathetic nature. **H. COPPEZ.**

(3) This communication by **Fuchs**, of Vienna, gives a description of several cases, which are of considerable clinical interest. In one case sympathetic ophthalmia appeared 29 years after the primary injury, the typical sympathetic inflammation, as distinct from traumatic endophthalmitis, was here very marked. Special attention is given to this class of cases where sympathetic ophthalmia is unaccompanied by plastic exudation in the eye first affected. In these cases it may happen that the exciting eye retains better vision than the sympathizing one. Another group to which Fuchs refers as tending towards confirming his distinction between endophthalmitis and sympathetic ophthalmia are cases where the sympathizing process is histologically well marked but this other eye escapes. Description of two very interesting specimens of this character are given. But it must be remembered that it seems as yet impossible to say whether an initial stage of the process is sympathetic ophthalmia or not, even if examined anatomically, and that spontaneous chronic iridocyclitis may produce an anatomical appearance which cannot by our present means of diagnosis be distinguished from sympathetic ophthalmia. **R. GRUBER.**

(4) The chief points of interest in the case, reported by **Oliver**, of Philadelphia, were that the injury did not involve the ciliary region, and that the foreign body which produced the wound was promptly removed by means of the hand-magnet. Two months later the injured eye again became tender and inflamed and the fellow eye became irritable with some haziness of the media. These symptoms were easily banished after removal of the offending

eye. Microscopic examination of the latter showed widespread disorganisation of ciliary body, retina, choroid, etc.

A. J. BALLANTYNE.

(5) The histological details of the interesting eye described by **Alt** can only be appreciated in the original. The most interesting point seems to be that without ever having been perforated this eye caused sympathetic irritation of the fellow eye. We may therefore quote in full the concluding paragraph:—“As this eye had undoubtedly been the cause of the sympathetic irritation of the fellow eye its pathological condition was especially interesting. The bone formation was undoubtedly of long standing and had not caused any sympathetic affection in all these years. (Alt first saw the patient in 1889 and diagnosed retinitis proliferans. The eye was excised 1909). Aside from all the changes in the intraocular tissues which culminated in this bone formation, these tissues now show numerous focuses of round cell infiltration, which in their very arrangement seem to point at once to a microbic irritant. They are, at any rate, of recent date, and, therefore, in the sense of Fuchs' researches, probably the ultimate cause of the sympathetic affection of the other eye. I was unsuccessful in my trials to find some micro-organisms. This eye had at no time in its life history suffered an injury or a perforation of its outer walls. It seems, therefore, that all of its pathological changes have been caused by some endogenous infection, but more especially the recent invasion of the quiet, though very much altered, tissues of the uveal tract. The conditions found are such as to support Fuchs' opinions concerning the origin of sympathetic disease.” (Something on this subject will be found in the third American edition of Fuchs' *Text-Book*, p. 338.—E.T.)

ERNEST THOMSON.

(6) This paper by **Meller**, of Vienna, refers to a case of choroidal sarcoma in which seven years after loss of vision, sympathizing inflammation set in. The pathological character corresponded with Fuchs' description of similar cases. Meller concludes that in these cases an endogenous origin of what he calls the “sympathetic infection” must be assumed. He thinks that a similar course may be not the exception but almost the rule also in cases where an external injury has taken place, thus accounting for the often protracted period of latency. In these cases the sympathizing inflammation has developed, but requires the stimulus of endogenous infection through the circulation to set up the affection of the uvea in the fellow eye.

R. GRUBER.

(7) As the result of his clinical experience, **Marsilla** concludes that enucleation is a valuable remedy for sympathetic ophthalmia in all cases; it is probable that the vision which exists in the sympathizing eye at the time of enucleation will be retained, and, more, will often be recovered. If, however, the exciting eye retains good vision, enucleation is contra-indicated. It is most unfortunate that the foreign and English convention differ in the manner of applying the word “sympathizing.” The English use (to mean the eye affected secondarily after the injury) seems the obvious one; but the foreign use signifies by the sympathizing eye, that which excites sympathetic inflammation in the other. In the abstract the writer has used the term in the English sense, but in the paper it is used in the other way.\*

HAROLD GRIMSDALE.

(8) For some years **Trousseau**, of Paris, has taught that the application of the galvano-cautery to hernias of the iris is apt to be followed by sympathetic ophthalmitis. He is now more than ever confirmed in this belief, since he has met with five such cases.

SYDNEY STEPHENSON.

\* With regard to this point, see the remarks made by Dr. H. Gifford, of Omaha, U.S.A., quoted in *THE OPHTHALMOSCOPE*, 1909, p. 655.—EDITOR.



## VIII.—VOLUNTARY NYSTAGMUS.

- (1) **Mauersberg, G.**—On intentional nystagmus. (Ueber Willkürlichen Nystagmus.) *Zeitschrift f. Augenheilkunde*, August, 1909.
- (2) **Lafon and Bonnet, M.**—Voluntary nystagmus. (Nystagmus Volontaire.) *Recueil d'Ophthalmologie*, October, 1909.

(1) Rachlmann suggested in his article "On Nystagmus and its Aetiology" (*Archiv für Ophthalm.*, Bd. XXIV, S. 4) that nystagmus is not always out of the control of the sufferer but that in isolated cases it can be controlled or initiated at the will of the individual. Gräfe and Michel also support this theory. Very few of these cases have, however, been recorded, and so **Mauersberg**, of Posen, describes one which came under his own notice. He has seen another case of this kind, but had not the opportunity of examining it carefully. This last was in a young lady, aged 16, who for years had been able to produce nystagmus at will. The other case was also in a young woman, aged 23, who from her very earliest youth could demonstrate nystagmus at will. The eyes were myopic but otherwise normal. Neither of the individuals had ever suffered from ordinary nystagmus.

The paper discusses the literature of the subject, and mentions Lawson's case (*Ophth. Hosp. Reports*, X, 1882). T. HARRISON BUTLER.

(2) **Lafon and Bonnet's** case of voluntary nystagmus forms an interesting and valuable contribution to the subject, owing to the minute analysis of the subjective symptoms made by the patient, a doctor who had been a fellow-student of the writers. When he was about 14 years of age he casually applied the poles of a strong Ruhmkorff's coil to his temples and found that this produced rapid horizontal oscillations of all objects looked at. Some time later he discovered that the same effect could be produced by forcibly opening the eyelids, and since then he has been able to reproduce the nystagmus at will. The maximum effect is produced by fixing an object about 10 centimetres away in the median line, and a little above or below the horizontal plane passing through the pupils. The object is fixed very intently by opening the lids as widely as possible. In fact, all the external ocular muscles being simultaneously and forcibly contracted, a slight effort of convergence will then set the eyes in motion. The oscillations produced while the eyes remain converged to this extent have an amplitude of about 3 millimetres, and a rhythm of 4 or 5 a second. Their amplitude and rapidity diminish in proportion as the distance of the object fixed is increased, and when the axes of the eyes are almost parallel the amplitude is only about 1 millimetre and the rapidity only 2 per second. The apparent displacement of the objects is about 4 centimetres and is always the same. Whatever their rapidity and extent, the oscillations are always purely horizontal, and are synchronous and identical in extent and direction in the two eyes. The movements provoke diplopia, and objects show apparent movements which are analogous to those of the eyes. The nystagmus cannot be produced without fixation of a near object, nor when the light is very intense nor when one eye is covered up. The movements are arrested if any but very slight vertical movements of the eye are made, when the eyes are closed, when one eye is covered up, and when the contracted orbital muscles are relaxed.

The normal contraction of the pupils associated with convergence is slightly increased when the nystagmus begins, and this remains until the nystagmus ceases, but varies according to the distance of the object fixed. The patient



had a slight degree of hypermetropic astigmatism, but otherwise the eyes were practically normal in every respect.

During the nystagmus the visual acuity (normally full) was reduced to  $\frac{1}{20}$ th, but at a distance of 30 centimetres the vision corresponds to  $\frac{1}{5}$ th, indicating a contraction of the ciliary muscle. The diplopia during the nystagmus was homogeneous and the separation of the images almost the same for distance and near.

The patient's personal and family histories were good, and he showed no disturbances of his nervous, muscular, or other systems.

J. JAMESON EVANS.

## IX.—ÆTIOLOGY OF RETRO-BULBAR NEURITIS.

Schieck, F.—The ætiology of retrobulbar neuritis. (*Die ætiologischer Momente der retrobulbaren Neuritis.*) von Graefe's *Archiv f. Ophthalmologie*, Bd. LXXI, Heft 3, September 21, 1909.

Our present knowledge of retrobulbar neuritis enables us to say that this disease is never of a primary nature, but must always be considered as part or product of other processes. Unfortunately, we are not as yet very successful in determinating the ætiological moment, and it was only a few years ago that Uhthoff stated that we are unable in more than one-half of the cases to trace the causal connection. This is partly due to the circumstance that retrobulbar neuritis precedes in disseminated sclerosis (to which it is often due) all the other symptoms for many years, sometimes ten or more. The common causes of retrobulbar neuritis are general nervous diseases, as multiple sclerosis and myelitis, and affections of the nasal sinuses—acute or chronic—and it is most important to note that there is no symptom that enables us to distinguish between these two origins. The ophthalmoscopic appearance, pain on pressure, and the central scotoma are absolutely identical in both cases, and with regard to the last it must be mentioned that it may be absent, especially in cases of rapid onset and great malignancy. Then, again, it must be remembered that cases of toxic amblyopia, although, as a rule, different by their more gradual development and their implicating both eyes, are often, at least at first, very difficult to exclude. The anatomical aspect of the affection of the optic nerve is also yet very far from clear.

Schieck, of Göttingen, is able to give an interesting description of the changes in the optic nerve in a case of diffuse myelitis. The changes were of a distinctly inflammatory character, originating in the glia and leading to secondary degeneration of the medullary substance and then of the axis cylinders. There is no record of the anatomical changes in case of affection of the optic nerve in disease of the nasal sinuses. The author feels inclined to assume, at least for some cases, collateral œdema within the optic nerve as a determining factor, as he could sometimes observe a kind of blurred cloud hanging over the entrance of the vessels on the optic disc, the absorption of which accompanied any marked improvement. The central scotoma seems due to a peculiar sensitiveness of the papillo-macular bundle, which is the first to be involved by any noxa which affects the whole of the nerve.

R. GRUBER.

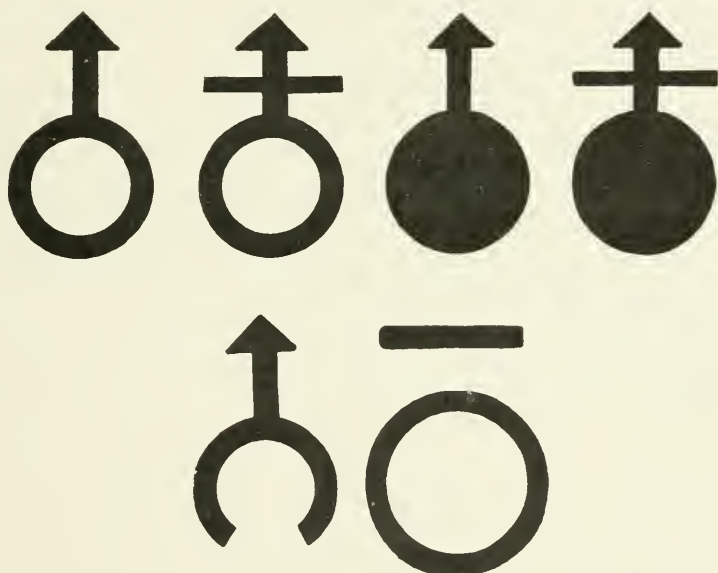
## X.—THE MAKING OF PEDIGREE CHARTS.

Smith, Priestley.—A note on the making of pedigree charts. *Trans. Ophthal. Society U.K.*, Vol. XXX, Fasc. 1, 1910, p. 35.

Now that genealogical "trees" have become so prominent and distressful a feature in most ophthalmic publications, it is worth while to enquire as to the best method of standardizing them and of rendering them intelligible.

In this matter **Priestley Smith**, of Birmingham, has come to our help. He has found it convenient to employ ready-made symbols, not drawn by hand, but printed on slips of paper. With the help of scissors and paste both time and trouble can thus be saved, and, as the author remarks, "a chart made in this way is better suited for photographic reproduction on a small scale than one which is hand-drawn, unless the drawing be very carefully done." The symbols he employs are legible at thirty feet or more, and should still be easily legible when reduced to one-sixth or even less for reproduction in book form.

The symbols, represented below, are to be interpreted in the following way :—



The ring, with arrow-head directed upwards, means **male unaffected**, while the same inverted means **female unaffected**. A black disc instead of the ring means **affected**. A line drawn across the stem of the arrow, **examined**. The omission of such a line means **trustworthy evidence, but not examined**. A horse-shoe instead of the ring means **no evidence as to affection**. Deletion of the arrow-head means **sex unknown**. A large ring or horseshoe with numeral, **so many of that kind**. The same with interrogation mark, **number unknown**. A horizontal line below a symbol means **no issue**.

In order to facilitate corrections, the form of the symbols has been simplified as much as possible. Any correction, of course, can be made by pasting a fresh label over the faulty one.

The printed symbols can be obtained from Messrs. Birbeck and Son, 158, Great Charles Street, Birmingham. SYDNEY STEPHENSON.

## XI.—THE GRAFTING OF RABBITS' EYES.

Wicherkiewicz.—On grafting the rabbit's eye in the capsule of Tenon to improve the ocular prosthesis. (*Sur la greffe de l'œil de lapin dans la capsule de Tenon pour améliorer la prothèse oculaire.*) *L'Ophthalmologie Provinciale*, mars, 1909.

Wicherkiewicz, of Crakow, describes in this article his method of obtaining a more satisfactory stump for the support of an artificial eye by the introduction of a rabbit's eye in the capsule of Tenon. He refers first to Chibret's successful graft of a pig's eye, Rohmer's failure with a rabbit's eye, and to Lagrange's results and publications on the subject, several of which have appeared since the first in 1901.

Wicherkiewicz's method of operating is practically that of Lagrange. He describes it as follows.—Chloroform is desirable as an anæsthetic, unless contra-indicated, when subconjunctival injections of novocaine and adrenalin are made around the four recti muscles. The conjunctiva is freed in the ordinary way as for enucleation, and the four recti muscles, beginning with the internus, are picked up and threaded with a catgut suture passed through Tenon's capsule and the muscle-tendon; the tendons are then cut close to their insertion. The globe is next freed carefully and completely from its attachments (obliques, optic nerve, etc.) and removed. Tenon's capsule is washed out with cold sterile saline solution, and a freshly enucleated rabbit's eye, resting temporarily in tepid saline solution, is introduced into the cavity, the cornea being placed posteriorly towards the apex of the orbit. The recti muscles are then united over the globe, superior to inferior, and externus to internus, and the conjunctiva is closed over all by a purse-string suture of silk. Both eyes are dressed for three days, the conjunctival suture is removed on the fifth day, and by the end of the month, in the majority of cases, the stump is ready for the prosthesis. In the cases in which local anæsthesia is used, the reaction is very great, and Leiter's apparatus is applied for some hours after the operation.

Wicherkiewicz has operated on 35 cases, which have shown the following immediate results: (1) the muscle tendons unite firmly to the grafted eye giving to it a mobility equal to that of the other, (2) the union is so complete that the grafted eye may become invaded by the recurring growth of a malignant tumour, for which the original eye had been removed—as happened in one case; (3) shrinking of the grafted eye takes place in all cases especially in elderly people, in whom it may become almost impalpable; (4) there is practically no danger of sympathetic ophthalmia occurring in the remaining good eye, *i.e.*, as far as the present period of observation extends, about two years. In all cases the cosmetic effect was at first excellent, but the writer states in a postscript written one year after the above, that his enthusiasm for the operation has decidedly cooled, on account of the diminution in size of the grafted globe, which appears almost inevitably to take place except in very young children, and that he now performs the operation only to effect a temporary cosmetic affect, or in children who are too young to wear a prosthesis, or as an inducement in cases where enucleation is urgent and there is a decided objection to losing an eye.

BERNARD CRIDLAND.

## XII.—EYE-STRAIN.

- (1) **Mackay, Duncan Matheson.**—The relief of headaches by the correction of errors of refraction. *Practitioner*, December, 1909.
- (2) **Clarke, Ernest.**—The manifestations of eye-strain. *Clinical Journal*, 2nd March, 1910.

Eye-strain is of such great practical importance that an abstract of two recent communications dealing with the subject will probably not be unwelcome to readers of THE OPHTHALMOSCOPE.

The communications in question are respectively by **D. M. Mackay**, of Hull, and **Ernest Clarke**, of London, and they afford an instructive contrast one with the other.

(1) **Mackay's** communication, which is couched in more or less popular language, deals solely with the relief of headaches by the correction of errors of refraction. It is now recognized that many so-called "functional" headaches—that is, as distinguished from "organic" headaches—are due to eye-strain, mostly as the result of an error of refraction. The error may be, and indeed usually is, insignificant, a fact known to and recognized by every modern ophthalmic surgeon, at least in this country and America. Mackay protests against the view, which he fathers upon our contemporary the *Lancet*, that astigmatism, when less than one dioptré, is of no importance. At the same time few British ophthalmic surgeons, according to our author, believe with Dr. George M. Gould, of Philadelphia, that most general ailments are to be attributed to errors of refraction. Mackay explains the connection between eye-strain and headaches by assuming—first, an irritation of the sympathetic nerve-endings in the ciliary muscle "producing congestion of the brain;" and, secondly, the necessity of dissociating two movements associated in nature. Some slight share may be taken by the inability, in spite of repeated efforts, of obtaining clear images upon the retina. The practical position, as it stands to-day, is summed up by Mackay in the following words:—"Every case of headache which is not removed by other means should be suspected of refractive error, and that this suspicion should only be dismissed if refractive error is proved to be absent."

(2) **Clarke's** paper covers wider ground, for he presents a summary of the various ill-effects that may result from eye-strain. He insists upon the fact that the smaller the error the more likely is eye-strain to be present, and also (unfortunately for the sufferer) the more likely is it to be overlooked.

The symptoms of eye-strain are grouped under three heads: 1. manifestations affecting the eye and lids; 2. peripheral irritation; and 3. nerve exhaustion.

1. Blepharitis, irido-cyclitis, glaucoma, and cataract are looked upon by Clarke as possible results of eye-strain. As to blepharitis, since errors of refraction have been corrected as a matter of routine in hospital work, chronic cases have practically disappeared from the out-patient room, although they once came in great numbers and returned month after month. In his opinion, recurrences of irido-cyclitis may often be prevented by proper attention to any existing error of refraction. That an attack of glaucoma may be started in hyperopia by strain upon the accommodation was suggested by the late Mr. G. E. Walker in the year 1881 (*Trans. International Medical Congress*), and Clarke expresses his belief that in a small eye, with hypertrophied ciliary muscle, eye-strain may lead to hypersecretion and perhaps to a form of mild cyclitis, accompanied by increased intra-ocular tension. On the



other hand, such an attack may be indefinitely postponed by correcting the ametropia with suitable glasses. His figures on the subject of cataract, originally published in 1897-8, are of interest.—In 200 cataractous eyes, he found that 150 had astigmatism, 49 hyperopia or presbyopia, and 1 simple myopia. To put the matter in another way, eye-strain must have been present in 98% of the cases. “Apart from any theory as to how eye-strain, especially astigmatism, may cause cataract,” writes Clarke, “the clinical fact remains that by giving the patient glasses to correct the defect, the lens changes remain *in statu quo* for many years, and if the patient is seen and this treatment adopted in the early stage of the disease, when vision is very little less than normal, glasses will prove of enormous value to the patient.”

2. Headache is the commonest manifestation of the peripheral irritation caused by eye-strain. It is, indeed, so frequent “that no physician should attempt to treat a patient for constantly recurring headaches unless the existence of eye-strain has been eliminated by proper correction (? examination) under a cycloplegic.” The character and position of ocular headaches are infinitely various. But the so-called “bilious” headache of the old school is usually an ocular headache. A large percentage of cases labelled “megrin” are of purely ocular origin. It is a sound rule never to attempt to treat a headache as megrim without first eliminating eye-strain. Among other manifestations of peripheral irritation caused by eye-strain, Clarke enumerates epileptic attacks and choreiform movements of the facial muscles. Vertigo and hyperidrosis are also to be included.

3. Controversy has been rife as to the part played by eye-strain in the causation of such conditions as brain-fag, nerve exhaustion, and neurasthenia. As well-known, Dr. Gould, of Philadelphia, in his *Biographic Clinics* has attempted to prove (and Clarke thinks has succeeded in doing so) that some of the greatest thinkers, Carlyle, Darwin, and Huxley, among others, suffered from eye-strain, to which the other forms of ill-health with which they were affected were due. In Clarke's experience, there is no form of functional nerve trouble that may not be due to eye-strain.

Insomnia, suicidal tendencies, alcoholism, and the drug habit are all conditions that, in Clarke's view, may be bettered by careful correction of any ametropia that may exist. He does not think it unreasonable that dyspepsia, constipation, and the very early stages of tuberculosis may be benefited by the same measures.

In sum, then, the abolition of eye-strain must take a prominent place in the preventive medicine of the future. The main reason why the eyes as a cause of mischief have been often overlooked is because most of the patients enjoy good sight or because they are already wearing glasses which only partly correct their ametropia.

SYDNEY STEPHENSON.

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### XIII.—EXOPHTHALMOS IN CHRONIC NEPHRITIS.

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**Barker, Lewellys F. and Hanes, Frederick M.—Exophthalmos and other eye signs in Chronic Nephritis.** *American Journ. of the Medical Sciences*, October, 1909.

In the present communication **Barker** and **Hanes**, of Baltimore, draw attention to the frequent occurrence in chronic nephritis of exophthalmos, and advance the view that the exophthalmos is analogous to that of exophthalmic goitre, being merely one of a number of evidences of chronic

systemic intoxication. The condition is believed by the authors to be due to a toxic effect upon the autonomic nerve fibres passing to the eye through the cervical chain, producing contraction of the unstriated muscles attached to the septum orbitale in front and to the equator of the eyeball behind (MacCallum, Cornell, and Landström).

It is a somewhat remarkable fact that exophthalmos, as a sign of chronic nephritis, appears hitherto to have escaped description. It is, however, by no means infrequent. Thus, during the first four months of 1909, 48.4 per cent. (16) of the total number of cases of chronic nephritis (33) admitted to the Johns Hopkins Hospital at Baltimore showed exophthalmos, which varied in degree, as did the gravity of the nephritic process. It was an obvious sign in the seven patients who succumbed to chronic nephritis in that Hospital since January 1st, 1909. In cases of serious intoxication (suburæmic or uræmic symptoms) exophthalmos was most frequent in association with one or more of the allied ocular signs, namely, anisocoria, von Graefe's, Moebius', or Stellwag's sign. Cases of chronic nephritis complicated with albuminuric retinitis invariably manifested exophthalmos, together with other ocular signs, for the authors emphasise the fact that exophthalmos is but one of several ocular signs which are often present in chronic nephritis. Indeed, all the classical signs of exophthalmic goitre may exist in a maximum degree in chronic nephritis without any obvious affection of the thyroid. The conclusion is that in both diseases a chronic systemic intoxication of the autonomic system is the causative factor in the production of the ocular manifestations.

With regard to the other ocular manifestations, in the series of 16 cases, Graefe's sign was found in 68.7 per cent., Stellwag's in 81.3 per cent., and Moebius' sign in 43.7 per cent. Moreover, the pupils were unequal in 31 per cent., and albuminuric retinitis was observed in 50 per cent. That the exophthalmos is not due to chronic hypertension appears to follow from the observation that arterial pressure exceeding 160 mm. was present in twelve of the authors' sixteen cases. Furthermore, in the experience of Barker and Hanes, a small percentage of cases only which have arterial hypertension show exophthalmos. In fact, both conditions, the hypertension and the exophthalmos, are due to chronic intoxication, possibly, as the authors suggest, by separate toxins.

SYDNEY STEPHENSON.

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#### XIV.—TRACHOMA.

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**Pascheff.**—Research on the nature and ætiology of true trachoma.  
(*Recherches sur la nature et l'étiologie du trachoma verum.*)  
*Archives d'Ophtalmologie*, janvier, 1910.

**Pascheff**, of Sofia, Bulgaria, in a communication of considerable length, describes his researches on trachoma. His work began some five years ago with the inoculation of the healthy conjunctiva of a young girl with adenoid vegetations from the naso-pharynx. The immediate result was an acute conjunctivitis, in which streptococci were found. On the third day, however, small nodules appeared in the conjunctiva of the fornices and over the superior tarsus, becoming in a few days definite follicles. Histological examination of these showed that they were similar in structure to those obtained from the conjunctiva of the rabbit after inoculation with trachomatous tissue. Five other cases were treated in the same way, but

although in two considerable inflammatory reaction of the conjunctiva was set up, lasting for fifteen days, no follicular formation was observed.

His research was continued by the observation of "simple chronic granular trachoma," mostly in young soldiers.

The clinical, histological, and bacteriological results have led Pascheff to the following conclusions.—1. Simple chronic granular trachoma, the only true trachoma, is characterised by a lympho-adenoid tissue, richly developed, with germinative centres. 2. This tissue has no specific structure, for it is similar to the tissue of pharyngeal granulations, of adenoid vegetations, and of the experimentally-produced follicle. 3. This tissue, which is only a special hyperplasia of the adenoid layer of the conjunctiva, is abundantly formed in the more vascular regions of the conjunctiva, *viz.* :—fornix, around the caruncle, subtarsal sulcus, and limbus. This shows that the blood vessels, as well as the lymphatics, play therein an active rôle, and is explained by their marked injection and the intimate relationship of their fine ramifications with the follicle. This relationship is beyond doubt; in a case where the bulbar conjunctiva showed follicles, the vascular trunk going to one was compressed with forceps, and at once at the site of the follicle appeared a hæmorrhagic point. Histological examination of the follicle showed that it was surrounded from base to summit by thrombosed vessels. 4. Trachoma appears clinically as granulations and follicles. The former are more confluent, and are constituted by one large "germinative centre," (forming sometimes quite a tumour), or by several small ones, of a pale, rose, or yellowish-red colour, and easily yielding their contents on pressure. The follicles are generally more superficial, better defined, less rich in adenoid tissue, and smaller; nevertheless, they may be found—although rarely—grouped together, forming granulations, tumours, or membranous veils.

Two facts of the highest importance, in the author's opinion, are :—(a) The coincidence in the same eye of granulations and follicles. In many cases, besides large granulations of the fornices and tarsus, little follicles are found scattered over the bulbar conjunctiva, and also over the tarsus and cornea near the limbus. (b) The follicles on the bulbar conjunctiva may occur also with phlyctenulæ at the limbus, with or without small follicles in the fornices. The coincidence of follicles and phlyctens has also been noticed in the "ophthalmo-reaction," where the conjunctiva reacts to the same agent, tuberculin.

The identity of structure between the lympho-adenoid vegetations of the pharynx and naso-pharynx and the lympho-adenoid follicular vegetations of the ocular conjunctiva implies an identity of causation and mode of re-action. The formation of the follicle may thus be a reaction common to the conjunctiva and to its neighbouring mucous membrane, *i.e.*, that of the naso-pharynx and pharynx. This reaction, however, though it can be produced experimentally by a chemical, toxic, or bacteriological agent, is not present nor equally developed in all individuals; this has led the author to the conclusion that some extra-infection is necessary for its development, and, moreover, a special "soil." Now the most favourable soil for the development of all these follicular vegetations, which, together with the fibro-adenoid vegetations of spring catarrh and the plasma-cellular vegetations of the conjunctiva should form one group, is found in the lymphatic diathesis.

BERNARD CRIDLAND.

## XV.—COLOURED TEARS.

Spilleers, Meinard.—On coloured tears. (Over gelcleurde tranen.) *Ned. Tydschrift voor Geneeskunde*, 1907, No. 14.

A hysterical woman presented herself with membranous conjunctivitis. The surface of the membrane was coloured green, and so were the tears she shed. The patient was taken in for clinical observation, but nevertheless she continued to have attacks of membranous conjunctivitis with green tears. A piece of membrane was placed in the conjunctival sac of a rabbit, and after some days the animal also shed green tears, and presented green membranes in its conjunctival sac. It lasted some time before the real state of affairs came to light. The patient was closely watched, day and night, and once she was observed putting pieces of crystals of copper sulphate into the eye of the rabbit.

G. F. ROCHAT.

## XVI.—OPTIC ATROPHY IN SYRINGOMYELIA.

Shumway, E. A.—Optic atrophy in syringomyelia: Congenital cataract with unusual atrophy of the iris from secondary glaucoma. *Annals of Ophthalmology*, Vol. XVIII, July, 1909, p. 467.

Shumway, of Philadelphia, describes an interesting series of ocular lesions accompanying syringomyelia.

The patient, a woman, aged 26 years, was admitted to the Philadelphia General Hospital in May, 1906, suffering from syringomyelia with peculiar ocular symptoms. The history of the case was as follows.—The vision of the left eye was always poor, but that of the right eye had kept good until the patient was 17 years old, when the sight began to fail, and at the time of admission to the hospital amounted to perception of light only. On admission, both eyes were prominent, the left eye was blind and the iris could not be seen. The extraocular movements were good, and on the patient looking to the extreme left, slight nystagmic movements appeared. In March, 1907, light perception was absent from both eyes. Exophthalmos was present on both sides, but more marked on the right. There was paralysis of the left superior rectus and paresis of the right external rectus. Cataract in each eye and optic nerve atrophy in the right eye. The cataract in each eye was posterior polar; in the right the opacity admitted an examination of the fundus, when secondary optic atrophy was made out. In the left eye the tension was +1, with a resulting atrophy of the iris tissue. The left lens was absorbed except for a narrow disc at the posterior pole. The periphery of the lens being opaque, presumably from capsule, prevented the fundus being observed.

This case is interesting on account of the optic atrophy which is unusual in syringomyelia. Here the atrophy was secondary to a neuritis.

J. WHARTON.



## XVII.—EMPHYSEMA.

- (1) Desbrières and Grenier. — On palpebral emphysema. (De l'emphysème palpébral.) *L'Ophthalmologie Provinciale*, mai, 1905.
- (2) Salus, R. — On emphysema of the orbits and lids. (Ueber das Luftemphysem der Orbita und der Lider.) *Zeitschrift für Augenheilkunde*, Oktober, 1908.

(1) Desbrières and Grenier record the case of a patient who on blowing his nose rather more forcibly than usual, suddenly developed emphysema of the right upper lid. He had no disease of the lacrymal passages or of the eye or its annexes, had not had any fracture of the bones of the nose, and did not suffer from coryza. The authors quote seven other cases (four traumatic and three idiopathic) which have been recorded by various observers, and discuss the symptoms, ætiology, progress, diagnosis, and treatment of the condition.

R. J. COULTER.

(2) Four excessively ordinary cases, such as are constantly seen in any large *clinic*, are described by Salus, of Prague. The theme is further laboured by a compilation of the literature of the subject. The condition can be divided into four groups: (1) Orbital emphysema, (2) orbitopalpebral, (3) pure palpebral, and (4) emphysema of the palpebral conjunctiva. The air generally escapes by a fracture of the lamina papyracea and of the lacrymal bone. Fuchs considers that these fractures are caused by a direct blow upon the eye. The force is conveyed to the orbital contents, and by a simple law of hydrostatics, is equally distributed upon the orbital walls: the lamina papyracea, the thinnest portion, gives way. Walser has experimentally shewn that fractures can be so produced. The author has failed in his single experiment to produce a fracture in this way, but he believes that Walser's experiments are sound. He, however (and we feel very sensibly), is unable to accept Fuchs' explanation except as regards a few exceptional cases. He believes, and has founded his view upon experiments on several skulls, that the fracture is almost always the result of indirect violence.

T. HARRISON BUTLER.

## XVIII.—RETINAL DISEASE WITH MASSIVE EXUDATION.

- (1) Griffith, A. Hill, and Ormond, A. W. — A case of massive exudation of the retina with (?) arteriovenous communication. *Trans. Ophthalmological Society U.K.*, Vol. XXIX, 1909, p. 279.
- (2) de Schweinitz, G. E. — Concerning a form of retinal disease, with extensive exudation; being a clinical contribution, with the report of two cases. *Trans. American Ophthalmological Society*, Vol. XII, Part I, p. 273. and *Archives of Ophthalmology*, September, 1909.

(1) This most instructive case by Hill Griffith, of Manchester, and Ormond, of London, does not lend itself to abstract, an account of the fulness of the details given. It belongs to the class of case of which the first was reported by Fuchs in 1882, and which was investigated by George Coats a year or two ago (*Royal London Ophthalmic Hospital Reports*, November,

1908\*). The clinical picture can be best explained on the hypothesis that the mass is due to an old hæmorrhage in the outer layers of the retina which has since organized and has opened up a communication between an arterial and a venous channel.

ERNEST THOMSON.

(2) Cases of retinal diseases characterised by massive exudation have been recently considered by George Coats in the *Royal London Ophthalmic Hospital Reports*, of November, 1908.\* Coats, it will be remembered, divided the cases into three groups, *viz.* (1) those unaccompanied by gross vascular disease; (2) those accompanied by gross vascular disease; and (3) those with arterio-venous communication.

The two cases now reported by de Schweinitz, of Philadelphia, lead that surgeon to agree with Coats in thinking that these massive exudations, although resembling tubercle, are in reality due to the slow organization of hæmorrhages. Essential details are as follows:—

CASE No. 1.—Female, 19 years. The vision of the right eye always poor, and now with astigmatism corrected, equal to 6/150. The sight of the left had been failing for some months, and at the moment of examination it was 6/20. A large mass of greenish-white exudation, lying beneath the retinal vessels, crossed the entire length of the fundus in a vertical direction. It was somewhat lobulated in appearance, while over it were scattered many glistening masses, probably of cholesterine. There was a little pigmentation about the margin of the exudation. Beyond the main mass there was towards the periphery a second mass of exudation, elevated from 2 D to 6 D. The visual field showed a large wedge-shaped defect as regards the nasal side. No reaction, either local or general, followed the injection of old tuberculin, although continued for upwards of a week. General examination was negative except for the existence of slight anæmia. It is to be noted, finally, that one of the patient's uncles had died from pulmonary tuberculosis.

CASE No. 2.—A male patient, aged about 60 years, of nervous temperament, gouty, and with a tendency to a mild form of arterio-sclerosis. When examined by de Schweinitz, R. V. 1/60, L. V. 4/4. R.E.—Vitreous opacities. Large area of white exudation above disc, in macular region, and down and out from disc. In the last-named position the exudation had a yellowish-white appearance, and was elevated 4 D., and lay, for the most part, beneath the retinal vessels. L.E. Epithelial choroiditis of moderate degree. A second examination, made seventeen months later, showed that the exudation was elevated 6 D., that it had assumed a somewhat knobbed appearance, and that in places it had a brownish-yellow colour. Syphilis could be excluded. No specific tests for tubercle were applied, but there was nothing in the clinical history or the general examination to suggest tuberculous infection.

SYDNEY STEPHENSON.

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## XIX—SPONTANEOUS RUPTURE OF THE EYEBALL.

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Ingalls, James W.—Spontaneous rupture of the eyeball. Report of a case. *Trans. Amer. Ophthal. Society*, Vol. XII, Part 1, p. 169.

Instances of spontaneous rupture of the eyeball in glaucoma have been recently described in the columns of THE OPHTHALMOSCOPE by Coppez, Villard, Shepherd, Fage, and Wibo.

Ingalls, of Brooklyn, N.Y., reports an instance in a woman of 89 years, whose left eye had burst a short time before the author saw the patient. Blood was oozing from the eyeball, and examination showed a confused mass of clot and prolapsed iris, estimated at 10 mm. to 12 mm. in diameter, protruding from the lower segment of the cornea. The sight of the affected eye had been failing for four years and entirely lost for several months before the accident. The actual rupture of the eyeball had been preceded by intense pain in the eye. The woman died from

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\*For abstract see THE OPHTHALMOSCOPE, 1909, p. 202.

diarrhœa about a fortnight after the occurrence, and the affected eye was then removed for pathological examination by **E. L. Oatman**, whose report was as follows:—

“The eyeball is slightly collapsed. Projecting from the anterior surface of the cornea is a black, lobulated mass of prolapsed uveal tissue, etc., measuring about 10 mm. in diameter. The base of the prolapse is constricted to pass through a perforation in the cornea 4 mm. in diameter. The eye has been the seat of extensive subchoroidal hæmorrhage, which has produced total detachment of the choroid, retina, and ciliary body, with consequent displacement of lens and iris. These structures are massed along the polar axis of the eye and contribute to the prolapse described above. The scleral



cavity is filled with an old blood-clot. The prolapse consists of degenerated uveal elements, lens capsule, *detritus*, and disorganised blood. Its external surface is covered with a thin layer of fibrous connective tissue, but not with epithelium. The margin of the corneal perforation is smooth and the tissues are condensed. Descemet's membrane extends to the opening and for a short distance along its course. Degenerative and proliferative changes in the retina, optic nerve-head, and uveal tract which have resulted from the detachment render it impossible to state their condition previous to the hæmorrhage.”

SYDNEY STEPHENSON.

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## XX.—ANGIOID STREAKS IN THE RETINA.

**Zentmayer, W.**—Angioid streaks in the retina, with the report of a case.  
*Trans. American Ophthalmological Society*, Vol. XII, Part I, p. 267.

Angioid streaks in the retina is a rare condition, of which relatively few examples have so far been placed on record.

**Zentmayer**, of Philadelphia, reports a case in a tailor, aged 33 years, whose personal history was unimportant. The man complained of dimness of sight in the right eye, which had set in four weeks before he consulted Zentmayer. There was a dendriform ulcer of the right cornea, and the sight of that eye

was 6/10. Slight changes were present in the visual field. L.V. = 6/6. Upon ophthalmoscopic examination, there was found in both eyes a system of jagged, anastomosing, pigmented streaks ramifying over the fundus, and lying beneath the retinal vessels. The streaks varied in size from once to thrice the diameter of a retinal vessel of the second magnitude. They became smaller towards the periphery of the fundus, where extensive choroido-retinal changes manifested themselves in a mottled, reddish-brown, broken zone. In the macular region of the right eye were two recent hæmorrhages, one small and the other of some considerable size.

In commenting upon the foregoing case, Zentmayer recalls Lister's suggestion as to the cause of angioid streaks, *viz.*, that they represent a system of newly-formed vessels, developed in the course of a chronic retino-choroiditis. While not expressing a dogmatic opinion, which the evidence so far available does not justify, Zentmayer, believes that the streaks represent so many pigmented vessels, either of inflammatory or congenital origin.

SYDNEY STEPHENSON.

## XXI.—THE PIGMENTED EPITHELIUM OF THE IRIS.

- (1) **Reis, W.**—Notes on the anatomical conditions found in congenital ectropion of the uvea. (Notz über den Anatomischen Befund bei Ectropium uveæ congenitum.) *Zeitschrift für Augenheilkunde*, Dezember, 1909.
- (2) **Worth, Claud.**—Cyst of the pigment epithelium of the iris. *Royal London Ophthalmic Hospital Reports*, January, 1910.

(1) **Reis** (Bonn) comes to the conclusion that ectropion of the uvea, the appearance of the iris pigment layer on the anterior surface of the iris at the pupil edge, may be a congenital condition, as well as an acquired abnormality the result of inflammatory changes in the iris. The illustrations which accompany the article make his contention quite clear. Ectropion uveæ is often associated with other abnormalities, and may co-exist with buphthalmos, irideremia, and with coloboma iridis. Much attention is devoted to Hosford's case shown before the Ophthalmological Society recently, and to the views then expressed by Stephenson, Collins, and Parsons.

The paper will be read with interest by ophthalmic pathologists.

T. HARRISON BUTLER.

(2) **Worth's** patient was a child, aged 5 years, who had a swelling on each side of the pupil of the right eye. The condition was noticed in both eyes when she was a year old, and the growths have varied in size much since. Quite suddenly those in the left eye disappeared. The child's health was good and the eyes had never been red or inflamed. At the edge of the pupil in the right eye were two cysts, one much smaller than the other. They were faintly translucent, the pupil was active, and there was no pigment in the lens capsule. In the left eye were little masses of pigment evidently marking the situation of similar cysts which had otherwise disappeared. Both fundi were normal, and neither showed any sign of past inflammation. A very good coloured drawing illustrates the condition. C. DEVEREUX MARSHALL.



## OPHTHALMOLOGICAL INSTRUMENTS

MADE BY

E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK.

- (1) Stevens' Clinoscope.
- (2) Savage's Cyclophorometer.
- (3) Savage's Monocular Phorometer.

The above instruments are briefly described below—further information will be gladly given upon application, or, by arrangement, they can be obtained upon trial.

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(1) Stevens' Clinoscope. The earlier model of the Clinoscope has been modified in order to serve in making investigations in physiological optics, as well as for measuring declinations of the retinal meridians.

As now made the tubes are 21 cm. long and 3.3 cm. in diameter, these proportions permitting a convergence of 15 deg. for each tube. The apparent size of the objects is not reduced, owing to a proportionate reduction in the length of the tube.

The purposes of the instrument are fully set forth in the Medical Record of February 16th and 23rd, 1901, from which the following extracts are taken :

“By normal declinations of the retinal meridians is meant a deviation of the vertical, horizontal, or any given meridian of the eye from the corresponding meridian of external space when the line of regard of the eye is directed parallel to the medium plane and in the horizontal plane, the head being exactly erect or, more technically, in the primary position.

“The Clinoscope is composed essentially of two hollow tubes, each of which has at one end a minute pinhole opening through which the eye can look, and at the other end a translucent disc on which is drawn a line in the case of one tube from the centre straight up and in that of the other tube straight down.

“These tubes are so adjusted on a standard that they can be placed and maintained in the same horizontal plane which is indicated by a spirit level, but from end to end they can be directed horizontally or up or down. They can, as above intimated, be made to converge or diverge to meet certain contingencies.

“The tubes rotate on their long axes, and a pointer attached to each tube indicates on a scale the extent to which the tube is rotated. The small sight openings are so adjustable that the distance between them may be suited to the interpupillary distance of different persons. For the accommodation of those who, on account of any high degree of refractive error, cannot see at the distance of the test objects from the eyes, there are clips in which refracting glasses may be placed. The instrument is adjusted in respect to height that the sight-holes will be on a level with the eyes of the examined person when sitting erect and the tubes are brought to an exact level with each other as shown by the spirit level.

"When the examined person has secured a good view of both the test lines he should endeavour, if they do not at once unite to induce them to do so as in a stereoscope. Some people do not succeed in this, in which cases the examination may go on with the images separated, but it is less satisfactory.

"When the apparent vertical position has been attained, the examiner should move them more or less backward and forward, in order that the true position may be more positively located. Few people can arrive at a satisfactory conclusion regarding the position of the lines at the first trial, but after a day or two the tests become, for nearly all intelligent people, remarkably uniform.

"*Result of Examinations*—Previous to the investigations by the Clinoscope a belief had prevailed among physiologists that there was in healthy eyes a fixed and definite position for the meridians of the eye, and that this position was general, if not universal. Helmholtz, Donders, Volkman, Meissner, and others had devised means for the investigation of the facts, all of which means were imperfect and misleading, and most of these investigators agreed that normally there existed, for the vertical meridian, a leaning out of about  $1\frac{1}{4}^{\circ}$ , while the horizontal meridian was supposed to coincide exactly with the real horizon."

(2) *Savage's Cyclophorometer*.—This instrument is used for detecting and measuring cyclophoria—a tendency of the vertical axes of the eyes to lose parallelism with the median plane of the head.

The instrument consists of the equivalent of a two-cell trial frame with revolving cells, mounted so the pupillary distance may be varied by a set screw at the end of the supporting bar. The arm carrying the cells is provided with a levelling attachment and a spirit level.

In examining for cyclophoria, a multiple maddox rod is placed in each of the revolving cells and a  $5^{\circ}$  prism, base up, behind one of them. The patient sees two horizontal lines of light, which should be parallel, and the ends even. The latter can be regulated by varying the pupillary distance. If the lines are not parallel they may be made so by rotating either maddox rod, the kind (plus and minus) and degree of the error being shown on the scale.

Cyclo-duction, the intrinsic power of each oblique muscle or of both superior or of both inferior obliques may also be measured.

Complete on floor stand, which may be raised and lowered as desired.

(3) *Savage's Monocular Phorometer*.—This instrument is designed for the determination and measurement of insufficiencies of the various ocular muscles and is based on the principle that the image in one eye throughout every test shall be undisturbed.

It consists principally of a rotary variable prism correctly marked in degrees and lettered to show the various conditions of muscular imbalance, such as exophoria, esophoria, hyperphoria, etc., etc. On each side of the rotary prism are cells, in one of which, toward the patient's face, is to be placed the displacing prism for causing diplopia. These prisms are carefully mounted in square cells for securing accurate position at either  $90^{\circ}$  or  $180^{\circ}$ . The instrument is furnished with a spirit level and a levelling screw.

The prism is reversible for either eye and is furnished on a floor stand which can be raised and lowered.

The "Meyrowitz Bulletin" can be obtained upon application to E. B. Meyrowitz, 1a, Old Bond Street, London.

## XXII.—VASCULAR OBSTRUCTION.

- (1) **Schultz-Zehden.**—Obstruction of the central vein by swelling of its walls caused by infiltration with lymphocytes (Peri- and Mesophlebitis) with consecutive retinal hæmorrhages. (Quellungsverschluss der Zentralvene durch lymphocytaire Infiltration (Peri- und Mesophlebitis) mit konsekutiven Netzhautblutungen.) *Zeitschrift für Augenheilkunde*, April, 1909.
- (2) **Inouye, Tatsuji.**—A case of obstruction of the central vein and glaucoma. *Royal London Ophthalmic Hospital Reports*, January, 1910.

(1) **Schultz-Zehden** (Berlin) regards his case as unique. Up to the present the known causes of obstruction of the vena centralis retinæ have been.—(1) A thrombosis without disease of the walls of the vein; (2) a thrombosis based upon disease of the walls; (3) a pure disease of the walls; (4) a compression of the vein from without. The author's case was due to an uncomplicated affection of the walls of the vessel, a peri- and mesophlebitis obliterans. One somewhat similar case has been described by Harms.

The communication has no clinical interest, but is valuable as a contribution to pure pathology.

T. HARRISON BUTLER.

(2) The patient who suffered from this condition was a man, aged 66. The eye was in a condition of absolute glaucoma when removed, and the retina was covered with hæmorrhages. A very careful description of the eye, both macroscopical and microscopical, is given, and although there is no definite proof, yet it is more than probable that the obstruction in the vein preceded the onset of the glaucoma, as was the case in 31 out of 32 recorded instances of this disease, and in only one, recorded by Bauer, was the reverse the case. The time between the obstruction taking place and the development of glaucoma varied from 13 days, in a case recorded by Coats, to 11 months, in another recorded by Harms; the average number of days was found to be about 100. **Inouye**, of Tokyo, considers the following to be the way in which the condition is brought about.—The obstruction causes retinal hæmorrhage, and the corpuscles in disintegrating produce toxins which are carried to the anterior chamber, in consequence of the defective drainage of the occluded vein. The tissues about the angle become inflamed, and adhesions form, and, no doubt, an important secondary part is played by angio-sclerosis, albuminuria, etc.

C. DEVEREUX MARSHALL

## XXIII.—PTERYGIUM.

- (1) **de Falco, Andrea.**—The importance of ocular fatigue in the ætiology and in the tendency to recurrence of pterygium. (Importanza della fatica oculare nella etiologia e nella tendenza alla recidiva dello pterigio.) *La Clinica Oculistica*, April, 1907.
- (2) **Truc, H. and Bonnet A.**—Sub-ptyrgial cyst. (Kyste sous-ptérygien.) *Revue générale d'Ophthalmologie*, 31 mars, 1908.
- (3) **Menacho.**—Anomalous varieties of pterygium. (Variedades anómalas del pterigion.) *Archivos de Oftalmología Hispano-Americanos*, August, 1909.

- (4) **Iverson, M.**—Pterygium. *Journal of Ophthalmology and Oto-Laryngology*, August, 1909.
- (5) **Campos, E. de Souza.**—A contribution to the study of the complications of pterygium. *La Clinique Ophtalmologique*, 10 octobre, 1909.

(1) **de Falco** attributes the recurrence of pterygia to the vascular disturbances which are common after operative procedures. By holding these in check, he thinks that he can prevent recurrence. He instils atropine into the eye during the healing and thus keeps the internal muscles at rest, while by injections of strychnine into the temples, he improves the condition of the exhausted ciliary nerves. HAROLD GRIMSDALE.

(2) Sub-ptyerygial cysts are rare. They result from inflammatory adhesion between the edge of the pterygium and the bulbar conjunctiva. Other cysts sometimes develop in the tissue of the pterygium itself. **Truc** and **Bonnet** describe a case of bilateral pterygium: in connection with one of the pterygia a cyst had developed to such an extent that the tumour covered half the cornea and had to be diagnosed from corneal staphyloma by the facts that the anterior chamber seemed normal and the iris not displaced. The ordinary pterygium operation sufficed to remove the tumour. The fluid escaped in the process and was lost. Histological examination seemed to prove that the cyst corresponded rather to a closed conjunctival fold than to an interstitial cavity, *i.e.*, that it was sub-ptyerygial and not ptyerygial. ERNEST THOMSON.

(3) In this short note **Menacho** calls attention to certain forms of pterygium which he has met with. The first, which he calls malignant pterygium, is characterised by a tendency to recur, not only *in situ* but to involve the various regions of the conjunctiva. The end in such cases is blindness, in spite of all operative measures.

A second form is complicated by cystic degeneration. In one such case he was doubtful whether the cyst were not an accidental infection of the pterygium by a hydatid.

A third form, "boring" pterygium, is characterised by the fact that the disease bores through the corneal tissues, and when the tumour is dissected off the anterior chamber is opened.

The last form is one in which the pterygium undergoes epitheliomatous degeneration. This is regarded by some as a simple coincidence, but considering the relative frequency with which this occurs in pterygium, **Menacho** thinks that it must be recognised as a definite complication. HAROLD GRIMSDALE.

(4) **Iverson**, of Wisconsin, has made a careful and extensive study of the literature dealing with this condition. He urges that treatment should be early, to avoid the involvement of the centre of the cornea and the astigmatism produced by traction. The condition is prevalent in dry and dusty climates, and is induced by dusty occupations.

The disease must be dealt with surgically, and in such a way that recurrences may be prevented.

Method practised and recommended by the author:—"I free the pterygium by traction with fixation forceps, and accelerate the process of denudation by the aid of the point of Graefe's cataract knife. . . . The growth is then pulled outward, and dissected loose under its body. Holding the forceps so that the inferior aspect of the growth may be seen, this open under surface is then sutured near the cornea with two stitches for about 1 to 1½ mm., the cone is then snipped away above the sutures which leaves an oval wound, which is then united or closed with a running,



suture from the last stitch. Every trace of conjunctival tissue is removed from the cornea with the curette. . . . The great difference between my method and Arlt's is that he uses conjunctival flaps from above and below the removed pterygium to cover the defect, that is, tissue with all its elements running, radiating against the cornea, inviting recurrence. I use tissue from the tumour itself, but turn all its elements converging from above and below against the wound line, preventing recurrence."

The article is illustrated with six diagrams, which make the description more intelligible.

HENRY L. G. LEASK.

(5) The complications of pterygium which have been observed by **Campos**, (Brazil) are (1) epitheliomatous formation in the head of the pterygium, and (2) dermoid associated with pterygium.

The question arises—and has arisen before in such cases—whether the epithelioma results from a transformation of a benign into a malignant tumour, or is a mere coincidence. The former opinion has been held by da Costa and by Menacho, the latter by Morax, but only five cases have been published altogether, and Campos is unable to come to a general conclusion. In his own particular case, however, the fellow eye had been removed previously, in what condition the patient was unable to say, and it is at least possible to assume that it was enucleated on account of a malignant tumour.

ERNEST THOMSON.

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## XXIV.—GLIOMA.

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- (1) **Hoffmann, G. M. V., Junr.**—A report on an interesting case of inherited glioma retinae. *Bericht der Oph. Gesellschaft zu Heidelberg*, 1909.
- (2) **Langerhan**.—Glioma retinae of the anterior portion of the eye with perforation of the lens capsule and detachment of islets of the lens by tumour cells. (Glioma Retinae des vorderen Bulbusabschnittes mit Perforation der Linsenkapsel und Abschnürung von Linsenschollen durch Tumorzellen.) *Zeitschrift für Augenheilkunde*, August, 1909.
- (3) **Heggie, W. C.**—Glioma of the optic thalamus. *Dominion Medical Monthly*, September, 1909.
- (4) **Sauvignea**.—Glioma of the retina of an abnormal clinical type. *La Clinique Ophtalmologique*, 10 novembre, 1909.

(1) A child was found by **Hoffmann**, of Baden-Baden, to have glioma of both eyes. The mother had had her eye removed on account of the same disease when she was two years old. In each case the exact histological nature of the neoplasm was ascertained by microscopical examination.

T. HARRISON BUTLER.

(2) **Langerhan** (Berlin).—A histological report upon a case of glioma of the eye of purely pathological interest which is sufficiently described by its title.

T. HARRISON BUTLER.

(3) R. T., ten years of age, was the fourth of seven children. The father and mother were healthy, and the family history on both sides was good. The child was seen first, December 16th, 1908, when she walked with a

kicking motion of the left foot. Her head was inclined backwards, her face drawn to the right, and there was an internal strabismus of the left eye. On December 26th, patient began to lose control of bladder and rectum, so operation was advised. The first stage of the operation, removing the bone, and completely exposing the cerebellum, was successfully completed, and the patient removed to the ward. She died, however, thirty hours after, from shock. At the *post-mortem* examination, a glioma of the right optic thalamus was found. The mass occupied the posterior two-thirds of the thalamus, and extended for a short distance beyond its margin.

HANFORD MCKEE.

(4) The points of essential importance in **Sauvignau's** interesting report are (1) that glioma of the retina, which ultimately became bilateral, had existed—to judge by the history of an unusual appearance in the pupil—in a child of  $2\frac{1}{2}$  years since the age of 3 months without giving rise to any thing more than occasional transient attacks of pain and inflammatory redness of the globe; (2) that when examined at the age of  $2\frac{1}{2}$  years the eye was voluminous, the tension was *diminished* and the appearances at the actual time of examination—apart from the history—suggested pseudo-glioma rather than glioma. Suspecting tuberculosis, Sauvignau withdrew some fluid from the vitreous with a syringe. Examination microscopically and by inoculation of a guinea pig was negative. Soon afterwards as the general condition of the child was getting worse, the eye was excised. A few weeks afterwards, a growth was found in the orbit, and glioma of the other eye was plainly visible with the ophthalmoscope. The pathological examination by Rochon-Duvigneaud revealed that the cavity of the globe was entirely filled with glioma and that retina and choroid had completely disappeared. The pathological report concludes with the following words.—“The absence of glaucomatous phenomena in this eyeball filled up by a neoplasm is not due to a rupture of the sclera—for there is no such rupture—but very probably to the early destruction of the choroid and ciliary processes. The vessels which, in the course of tumours, exude albuminous fluids, an accumulation of which determines hypertonic phenomena, have thus been put out of action at an early stage.”

The article concludes with a paragraph by the author emphasising the fact that, after all, when there is a difficulty in the diagnosis of glioma, the tension is not an infallible guide.

ERNEST THOMSON.

## XXV.—THE OPHTHALMIC SUPERVISION OF WORK.

**Motais.**—The ophthalmic supervision of work. (*De l'inspection ophtalmologique du travail.*) *L'Ophtalmologie Provinciale*, avril, 1909.

In a paper presented to the Permanent Committee for the Aid of the Blind and the Prevention of Blindness, **Motais**, of Angers, says that, whilst the ocular hygiene of schools and scholars is well looked after, little or no attention is paid to the hygiene of those who labour at trades where the conditions under which the work is done are harmful to the eyes, or where accidents to the eyes may occur.

These two classes of trades, which practically embrace all, are referred to as “*métiers applicants*,” or trades requiring the constant and close use of the eyes, and “*métiers dangereux*,” where accidents may occur.

An analysis of the "*métiers applicants*" has been taken in the Department of Maine-et-Loire, comprising book trades, textile trades, work in stuffs (tailoring, etc.), shoe-making, and office work, and is found to give employment to 17,050 workers. From this total it is assumed that there must be in the whole of France nearly 1,500,000 people who are daily overworking their eyes under faulty conditions, due to insufficient lighting and the harmful attitudes adopted by the workers, notably dressmakers, who "frequently prick their noses with their needles."

This state of affairs must be responsible for the production of multiple lesions, leading to blindness or semi-blindness, and rendering the unfortunate subjects unable to work, a misery to themselves and a burden to the State. For remedy two suggestions are made: (1) to reform the conditions under which work is carried on; (2) to give hygienic ideas to the workpeople. The best means for carrying out the second suggestion would be by the distribution of pamphlets, containing advice as to the best ways of using the eyes, supplemented by oral teaching in the form of an unpretentious chat where the employers raised no objections. The pamphlet method is, in fact, about to be adopted in the Maine-et-Loire Department, owing to the energy of the Prefect, M. Dupeyrat.

Compulsory examination of the eyes is urged, before a young worker goes to a trade, and for the reform of the conditions under which work is done in workshops, as regards adequate lighting, etc., it is suggested that an ophthalmic surgeon be appointed as inspector of work to give advice on this point and to see that it is carried out.

Under the heading of "*métiers dangereux*" come all trades which may injure the eyes by irritating vapours and dust, intense light and heat, or directly by blows from foreign bodies.

In the above-mentioned Department these trades account for 18,907 workers, giving for France 1,600,000 work people who are daily working under conditions which may produce blindness or semi-blindness. A plea is here put forward on behalf of the semi-blind, that measures should be taken to make it more easy for such to obtain relief when unable to work, for as far as inability to work goes, these people are in practically the same condition as the totally blind, but socially they are far worse off, as they are unable to obtain State relief as are the totally blind.

For the prevention of harm in trades where noxious vapours and dust occur, Motais advises that stricter cleanliness on the part of the workers be enforced, that they be given better opportunities for frequent washing of the face, hands, and eyes, that, where possible, masks should be worn, and ventilation generally should be improved. In trades where fragments of solid material are frequently flying about, protection should be made by suitable screens of metal, and in some cases by "preservative" spectacles, which should be tinted yellow where the workers are exposed to strong light and heat. The writer has himself designed a model which has been adopted by the directors of the State Railways for their employés; it fulfils the necessary requirements in being simple, light, ventilated, proof against the fragments, and not liable to become steamed. In conclusion, it is hoped that the above measures be made compulsory by law.

BERNARD CRIDLAND.

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## XXVI.—REMEDIES.

- (1) **Hirschberg, J.**—A tumour of the iris cured without operation. (Eine ohne Operation geheilte Iris-geschwulst.) *Centralbl. f. prak. Augenheilkunde*, September, 1906.
- (2) **Fejér, J.**—Cure of a case of double optic neuritis. (Ueber den Heilungsverlauf einer doppelseitigen Stauungspapille.) *Centralbl. f. prak. Augenheilkunde*, Juni, 1909.
- (3) **Truc.**—A case of ocular and cutaneous leprosy in a non-syphilitic, cured by intravenous injections of mercury cyanide. *L'Ophthalmologie Provinciale*, juillet, 1909.
- (4) **Killen, W. M.**—Adenoids and asthenopia. *British Medical Journal*, September 25th, 1909.
- (5) **Thomas, H. G., and Fischer, Martin H.**—The relief of glaucoma through subconjunctival injections of sodium citrate. *Annals of Ophthalmology*, January, 1910.
- (6) **Shumway, Edward A.**—The treatment of gonorrhœal iritis and arthritis by vaccines. *College of Physicians of Philadelphia, Section of Ophthalmology*, January 20th, 1910.
- (7) **Dunn, Percy.**—The treatment of diseases of the eye with thyroid extract. *Clinical Journal*, 16th February, 1910.

(1) **Hirschberg**, of Berlin, reports the case of a woman, 26 years old, who had a tumour of the left iris, apparently arising from the ciliary body. The woman was quite healthy, but the year before she had had sores on the left leg which had been a very long time in healing. She had been treated with mercury and potassium iodide for her eye condition, but as the latter did not improve in a short time, she was advised to have the eye removed. This Hirschberg considered unnecessary. The drugs were pushed in much larger doses, and, as a result, the condition gradually cleared up. **A. LEVY.**

(2) A rare case of cured double optic neuritis is recounted by **Fejér**, of Budapest. The patient, a man, aged 33 years, suddenly developed intense headache and failure of sight while at work. Five days later he was taken into hospital, and there he was found to have marked optic neuritis (swelling=3.4 mm.), vision=perception of light. Pupils reacted very sluggishly, he had bad headache, and a pulse of 60. The diagnosis was a brain tumour, and mercury was given by inunction, 3.0 g. daily; after eight days the patient began to see better, and after using 60.0 g. of mercury, vision=5/7, pulse was 90, and headaches had disappeared, and later the man returned to his work. **A. LEVY.**

(3) This communication by **Truc**, of Montpellier, was published in the *Annales d'Oculistique*, of June, 1909, and abstracted in THE OPHTHALMOSCOPE of the following December, p. 868.

(4) **Killen** (Belfast) refers to certain cases among school children and young adults in which asthenopia occurs as the result of naso-pharyngeal obstruction, pure and simple. That is to say, these cases have either no error of refraction or a very small one, and when the adenoids are treated, the asthenopia disappears. Of course, in many cases there is a more or less considerable error of refraction, and in these it is difficult to say how much of the asthenopia is due to the refraction error and how much to the adenoids. In many cases, undoubtedly, the adenoids are only an accidental accompaniment and need not be removed unless glasses fail to relieve, or there are other symptoms, such as mouth breathing and deafness.

ERNEST THOMSON.



(5) Sodium citrate was used by **Thomas** and **Fischer** because : (1) it is most powerful in decreasing the affinity of the ocular colloids for water ; and (2) not only does it decrease the tendency towards the formation of corneal opacity, but actually counteracts it. The strength of solution used is one varying from a 4.05 per cent. to a 5.41 per cent. of ordinary crystallised sodium citrate in water. From 5 to 15 minims of solution are injected, the eye, previous to injection, being treated with cocaine and adrenalin. The stronger solution is used only in the severer cases. For subsequent injections a mixture of 1 part of the 4.05 per cent. solution with 2 to 4 parts of physiological salt solution is employed. In some cases pain follows the injection. Five patients were treated and all were greatly relieved.

The authors state that "we have in the use of sodium citrate solution a method by which we can at any time rapidly reduce the abnormal tension of an eye in a state of glaucoma. But this fact must not lead one to conclude that we possess in this procedure a 'cure' for glaucoma." In fact, a cure can only be obtained by methods which aim at correcting the condition originally responsible for the formation of substances which increase the affinity of the tissue colloids for water.

J. WHARTON.

(6) **Shumway**, of Philadelphia, reported a case of gonorrhœal iritis and arthritis, which was successfully treated by the injection of gonorrhœal vaccines. Doses of 100,000,000 organisms were employed, and after 5 weeks the inflammation had entirely subsided, the eye was free from congestion, and the tenderness and swelling of the joints had disappeared. Pain and photophobia were relieved two days after the first injection, no local or general reactions were noted, and no abscesses appeared at the site of inoculation. Shumway made reference to the literature of the subject of the vaccine treatment of gonorrhœal infections, and said that the reports indicated that it was not of much value, in fact was somewhat dangerous, when employed in acute gonorrhœa and gonorrhœal conjunctivitis ; in chronic gonorrhœa, in the absence of mixed infection, it was of considerable value ; in vulvo-vaginitis of children, and in complications, such as arthritis and iritis, it was of great benefit. In these metastatic conditions, at least, the heterologous or stock vaccines were as efficacious as the homologous strain. Some of the British observers, notably Eyre and Stewart, advised the use of small doses of not over 1,000,000 to 10,000,000 organisms, but the majority of American authors had employed satisfactorily doses of at least 50,000,000 to 100,000,000. In the presence of a severe arthritis or iritis, as large doses should be employed as the patient would tolerate.

T. B. HOLLOWAY.

(7) This communication by **Dunn**, of London, may be said to range from China to Peru. But stripped of speculations upon the nature of cancer, the causation of cataract, the Metchnikoff theory, the functions of the thyroid gland, the virtues of chinosol, and the iniquities of the expressions "ophthalmia neonatorum" and "sympathetic ophthalmia," it comes to this, that thyroid gland, in doses of three grains thrice daily, is advocated by the author in the treatment of a multitude of eye affections. The treatment is recommended in cases of interstitial keratitis, acute "rheumatic" iritis, ulceration of the cornea, and specific choroido-retinitis, to say nothing of cases of chronic rheumatism. Incidentally, Dunn takes the opportunity of denying that interstitial keratitis is due to syphilis. The condition in question he regards as "merely a disease of nutritional defect occurring in children in whom a syphilitic taint exists, and that directly it is no more syphilitic in origin than, say, a phlyctenular conjunctivitis would be in a non-syphilitic child."

SYDNEY STEPHENSON.

## BOOK NOTICES.

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**Diseases of the Eye.** BY CHARLES H. MAY. Japanese edition.

We have sought in vain for one competent to read and to review the Japanese edition of Dr. May's well-known *Manual*. Under these circumstances, which we deplore but cannot alter, the situation is perhaps best described by Dr. May's own words, as follows, contained in a recent letter to the Editor of THE OPHTHALMOSCOPE—"I know," writes Dr. May, "you will agree with me that the translation has been exceedingly well done. I can find no mistakes of any sort, either in spelling, composition, or statement of facts. I will not presume to explain to you how to read the book, but I will say that I had to call in Dr. Takamine, the Japanese chemist of New York, to tell me which was the title page and which the index. With his help, I found out that the last page is the first and that the single row of characters at the end of the book represents the title page and that it reads "*May's Ophthalmology*."

**Diagnostic des Troubles de la Motilité Oculaire.** By Dr. E. LANDOLT. Edition française par le Dr. MARC LANDOLT. Paris : Masson et Cie., 120, Boulevard Saint-Germain. 1909.

In this attractive little monograph, edited by his son, Dr. Marc Landolt, the important and well-known contributions of that master of his subject, Professor E. Landolt, are summarised, together with such other useful facts of common knowledge as are required to complete the subject sufficiently for the use of physicians in the diagnosis of such general affections as may involve the ocular muscles. For ophthalmic surgeons it is highly advantageous to have Professor Landolt's careful work collected in this way and so well expressed.

After several sections on anatomy and physiology are disposed of, ocular paralyses, concomitant squint, associated paralyses, and affections of the centres and organs which preside over the equilibrium of the body are dealt with in turn, concisely and well, considerable attention being paid to cerebral localization, without going too deeply into the intricacies of the subject.

Near the centre of the book lies a table, containing a panoramic view of the phenomena of each individual paralysis, and illustrated by diagrams of the respective false images, which, far from being drawn haphazard, as in most works of the kind, are carefully planned out, so as to show the exact amount of displacement present in each paralysis when the deviation of the eye reaches 40 degrees.

Most of Professor Landolt's classical illustrations reappear in this volume and all with advantage, unless we possibly venture to except that which figures the supposed corneal ellipsoid of revolution. Since Sulzer and Tscherning have shown that the cornea exhibits a spherical cap in the neighbourhood of the visual line this ellipsoidal conception has been abandoned by most ophthalmologists. In connection with this diagram, very clear descriptions are given of the angles *alpha*, *gamma*, and *kappa*. The abandoned ellipsoid theory occasioned the regrettable multiplication of these angles, and it is not the least gain of Sulzer's observation that we can now return for practical purposes to the one simple angle which Donders first described.

A very good illustration and description is given of Professor Landolt's tangent figure, which resembles a magnified perimeter chart or spiders' web,

on the wall, encroaching somewhat on the floor to allow a large angular measurement for false images displaced downwards. The device was published so early as 1875 and was therefore antecedent to any tangent scales introduced for ophthalmic purposes in England or America.

Dr. Marc Landolt is to be congratulated on the wealth of material he has inherited, and on the able way in which it is arranged for the benefit of the many readers which this little book is sure to find. ERNEST E. MADDON.

**Transactions of the Ophthalmological Society of the United Kingdom.**

Volume XXX, Fasciculus 1, 1910. London: J. and A. Churchill, 7, Great Marlborough Street, W. Price 4s. net.

The first fasciculus of the thirtieth volume of the *Transactions* of the Ophthalmological Society was issued to members on March 10th, 1910. Among other items, it includes the President's Address delivered on October 21st, 1909. A little more attention might usefully be paid to such lists of references as are given. For example, the list on page 101, although it contains but eight names, more than compensates in blunders what it lacks in numbers.

**Photographic Optics and Colour Photography, including the Camera, Kinematograph, Optical Lantern, and the Theory and Practice of Image Formation.** By GEORGE LINDSAY JOHNSON, M.D., F.R.C.S., 300 pp. 1909. London: Ward and Co. Price 7s. 6d.

"The object of this work is partly in fulfilment of a pledge made over three years ago to a large number of opticians, that a work should be written on optical instruments to cover the ground of the Spectacle Makers' Company's examination on that subject; but it is written in the hope that it will have a wider scope and play a much more useful part than merely to furnish material for examinees to read up" (Preface).

We congratulate the author on the production of this book, which will be exceedingly useful to the amateur photographer, as it not only describes the characteristic forms of photographic lenses and cameras, but it also gives the special conditions in which each type is suitable. It is very fully illustrated, the three illustrations of colour photography (Plates I, IX, and X) being especially interesting. Plate V showing the condensation air waves of projectiles when fired from a gun, is most striking. Plate VII is a beautiful photograph of the section of a Lippmann film, showing the effect of the stationary waves of light owing to the interference between the advancing and the reflected waves. Plate XIV is devoted to five photographs of the human fundus oculi taken by Professor Dimmer. They are exceedingly good when all the difficulties of obtaining them are remembered, but they all have the appearance of being convex forwards, and in the illustration of the normal fundus the macula appears a dense black as compared to the very light grey colour of the rest of the fundus.

The purely optical part of the book is hardly satisfactory, but it must be remembered that it is treated with "the absolute minimum of mathematics;" at the same time we are sorry to note that the use of algebraic signs advocated by Professor Sylvanus Thompson and others has been adopted. To us it has always appeared that the consistent use of positive signs in the direction of the incident light is, when once understood, far the simplest. With Dr. Johnson's notation both the radii of a biconvex lens are considered positive, and we have to remember that positive distances of the principal planes mean a



*backward* measurement from the front lens for the first principal plane, but a *forward* measurement from the back lens for the second principal plane. There are several examples given of the methods of finding the cardinal points of thick lenses, which are quite correct, excepting the last instance of combined lenses.

In this case the value of the example is lost by not stating the thickness and the values of the radii of curvature of the second lens; they are apparently 1, 4, and 2, as these values give the right numerical results. The diagram is erroneous as  $P_3$  is really to the right of the second surface of the lens—that is, outside it. Again, for the system,  $E_1$  is 1.19 in. to the right of  $P_1$  (not  $P_2$ ), and  $E_2$  is 1.25 in. to the left of  $P_4$  (not  $P_3$ ). The diagram is entirely wrong as  $E_1$  is in the first lens and  $E_2$  is in the second lens; and the air interval instead of being .106 in. is about .062 in. The author on p. 70 gives  $2 - (0.888 + 1.05) = 2 - 1.894 = 0.106$  in. instead of  $2 - 1.938 = .062$  in. On p. 64 we read that the symbol  $r$  denotes the radius of curvature, but a few lines lower down and elsewhere  $r$  clearly denotes a point on the surface of the lens. There is some obscurity, also, about the Petzval condition for a flat field, as after the description of the Petzval rule, it is stated that Beck's Isostigmat lens gives a flat field, and yet it does not even approximately fulfil the Petzval condition.

With the exception of these blemishes, some of which will no doubt be removed from a second edition, we heartily recommend this book to the amateur photographer.

A. S. PERCIVAL.

**Manuel de Neurologie Oculaire (A Manual of Ocular Neurology).** By F. DE LAPPERSONNE and A. CANTONNET. Paris: Masson et Cie.. 1910. 6 fr.

There is no more fascinating branch of ophthalmology than that which deals with the relations of the eye and the nervous system, and there is none in which the task of presenting the essential facts and hypotheses in a lucid manner is beset with greater difficulties. The authors of this work are therefore to be congratulated on the success of their efforts to condense the subject within the limits of a modest volume of some three hundred and fifty pages. This can only be done by careful elimination of the superfluous, and a rigid economy in the use of words, but the attractiveness and accuracy of the book do not seem to have suffered. Small type has been avoided, and there is a pleasing absence of foot notes, but space has been saved by the omission of bibliography and detailed references.

The authors divide their work into two parts which approach the subject from opposite points of view. In the first part each portion of the ocular and visual mechanism is taken up in turn: the motor apparatus, the visual, the sensory, the vasomotor and the secretory; and in each case we have a description of the anatomy and physiology of the parts concerned, a discussion of the methods of examining them, and, finally, an enumeration of the symptoms produced by lesions of each part and the inferences to be drawn therefrom. The second section is shorter and takes up all the different bodily diseases, mentioning the symptoms referable to the ocular nervous apparatus to which they may give rise.

There are many parts of the subject of ocular neurology which are still in the region of controversy, but one does not look in a book of this kind for a discussion of the various theories. One has to be content with a dogmatic statement of one view or, at most, a mention of two or three different opinions,



but in the great majority of cases the information given is intelligible, accurate, and up-to-date.

One or two points may be referred to in which the reviewer ventures to differ from the statements made.—In the diagnosis of paralyses of extrinsic muscles reliance is chiefly placed on the homonymous or crossed character of the diplopia to distinguish between paralysis of an oblique muscle and that of the corresponding rectus. It is well known that these 'typical' diplopias are often interfered with by the presence of a pre-existing heterophoria, and experience shows that the position of maximum vertical separation of the images, and that of maximum obliquity of the false image, as recommended by Maddox, is a more reliable criterion. The authors repeat the usual text-book statements about the diagnostic value of the hemiopic pupil reaction. One wonders how many of those who help to perpetuate those statements have actually observed the phenomenon. If the results of the most recent work on this subject are trustworthy, and there seems to be no reason to doubt their accuracy, the hemiopic pupil phenomenon is a myth.

Illustrations are not very abundant, but most of those given are clear and helpful. The coloured plate to illustrate Holmgren's test is, however, rather a poor representation of the colours of the wools.

In conclusion, one may say that the paper, type, and general style of the book are excellent, and everything has been done to make reference easy. There is a good index, and a useful feature of it is that references are made, not only to the letterpress, but also to the appropriate figures.

A. J. BALLANTYNE.

**The New Physics.** By LUCIEN POINCARÉ. International Scientific Series. Kegan Paul & Co. 1907. Price 5s.

This book is an authorised translation of *La Physique Moderne, son Evolution*. It will well repay perusal; it is very clearly written, and mathematical language is avoided. Its chief fault (if it be a fault) is that it assumes too much knowledge of the reader, but the excessive condensation which has alone made it possible to include the last decade's discoveries in physical science within a compass of some three hundred pages, has, perhaps, made the facts here noted assimilable with difficulty by the untrained reader. This, however, may be regarded as an advantage, since those portions which are not fully explained can be studied elsewhere. The relations between electricity and optics have been treated at some length.

F. W. EDRIDGE-GREEN.

**Notes on Therapeutic Sera, Bacterial Vaccines, and Calf Vaccine Lymph.** Printed and published by Allen and Hanburys', Limited, London, 1910.

This pamphlet of thirty-two pages, copies of which can be obtained free by medical men from Messrs. Allen and Hanbury, London, is issued under the authority of the Lister Institute of Preventive Medicine, which prepares the various products dealt with in its pages. Its object is to describe clearly and concisely vaccines and sera, the properties and the way of using those remedial agents, and the after-effects; in a word, to give exactly those points upon which a busy practitioner will be glad to be posted. The pamphlet, however, goes farther, for it gives details as to the price of the sera, etc., as well as the telegraphic code that may be employed when ordering them from Messrs. Allen and Hanbury. The opusculum promises to be extremely useful.

**Luxe, Uni-bifo, Demi-Luxe.** Published by the UNI-BIFOCAL COMPANY, LIMITED, 188, Strand, London, W.C., 1910.

An illustrated pamphlet, which, considering the increasing demand for bifocals, is a useful addition to the rather scanty knowledge on the subject of the later forms of bifocals, is published by the Uni-Bifocal Company, of London. It is shown by diagrams how correct centreing may be obtained in invisible bifocals in all combinations of convex lenses and without the chromatic aberration hitherto believed an unavoidable defect. The chromatic aberration is of course avoided by the lens having only one index of refraction, being ground out of one piece of solid glass as shown by the "Luxe" lenses exhibited in various stages of operation. These diagrams show that to obtain correct centreing it is necessary to vary the diameter of the reading portion according to the combination of the two powers, and blocks of the ten sizes necessary are shewn varying from the full circle of 16 mm. to a part of a circle 50 mm. diameter. Two pages of the pamphlet are devoted to showing the correct diameter of the reading portions for all the usual spherical convex combinations between 1 and 20 dioptries, and a formula and axis chart are also shewn by which the correct diameter of the reading portion in compound lenses may be worked out, the addition of the cylindrical power having an influence on the diameter of the reading portion. How necessary it is to choose the correct diameter of the reading portion carefully is shown by some examples given in the pamphlet, from which it appears that nearly eight degrees of prism may be set up, for instance, by using the smallest reading portion when the largest should be used or *vice-versa*.

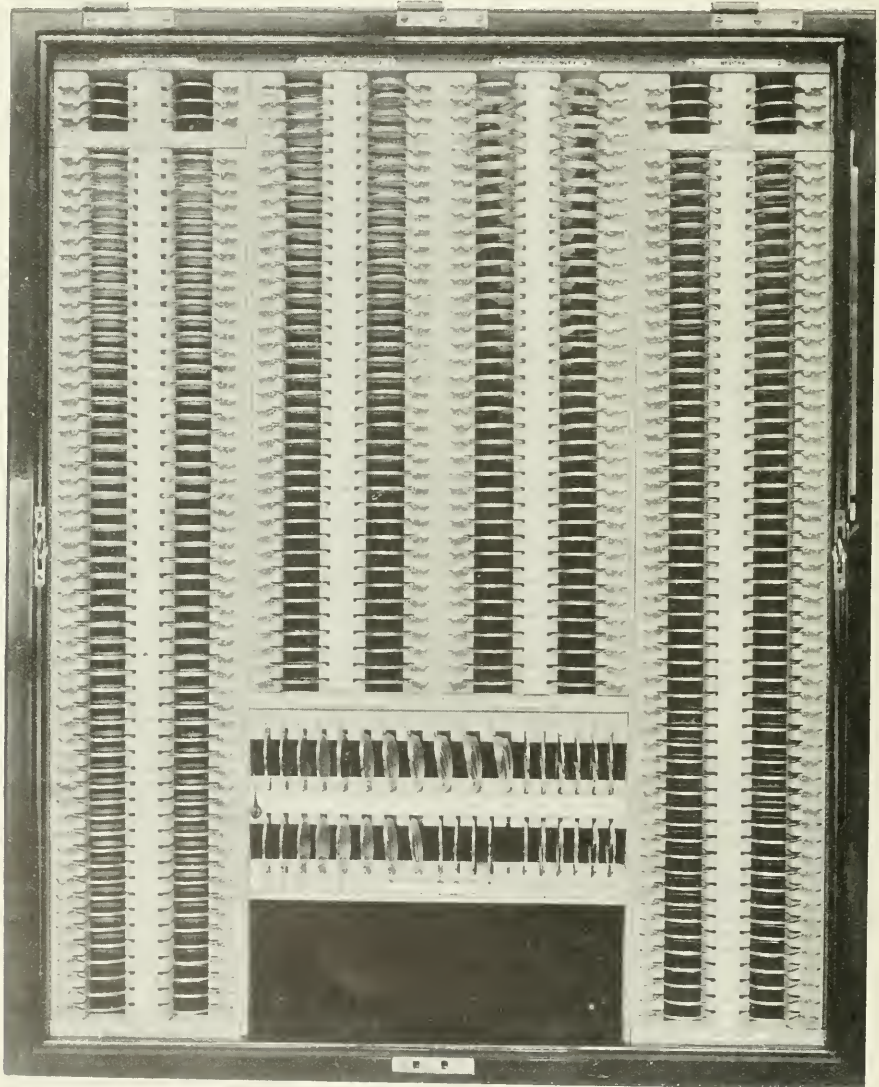
The diagram dealing with the concave invisible bifocals appears to demonstrate that the Company is right in its contention that no centre can be obtained in any concave invisible bifocal. The testing of the centre of an invisible bifocal is not an easy matter: in fact, in America, it is already compared as equal in difficulty to the "finding of a needle in a haystack." It is therefore very interesting to see a table with the amount of the prism worked out in some of the most ordinary concave combinations. For instance, a lens with a  $-5.00$  D. distance portion and with a  $-3.00$  D. added for reading, has a prism of  $4.97^\circ$  base down in a lens with the usual reading portion of about 19 mm. Should the diameter of the reading portion be enlarged, this prism would be considerably increased.

The pamphlet makes reference to the rules laid down by the Optical Standards Committee, which call for correct centreing within 1 mm., and on the basis of this report, suggests that concave bifocals should not be made in the invisible form, as there can be no reason to force people to submit to lenses with many degrees of prism when none is required, and when correctly centred lenses can easily be obtained.

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## THE LONDON OPHTHALMIC EXHIBITION.

The second London Ophthalmic Exhibition, organized by Mr. E. Schofield, was held at the rooms of the Medical Society on March 11th and 12th last. It was on a somewhat smaller scale than the exhibition of last year, but it contained many things likely to be of interest and importance to ophthalmic surgeons. A misunderstanding as to certain projected conferences by medical men, however, interfered sadly with the attendance of many surgeons.

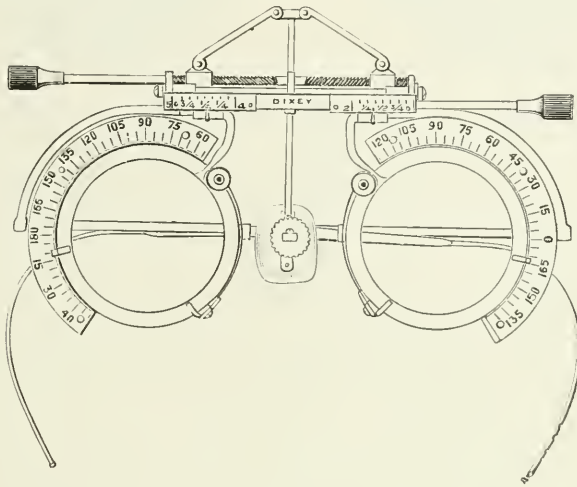


SPECIAL CASE OF TEST LENSES by C W DIXEY & SON, 3, NEW BOND ST & 20 WELBECK ST LONDON.

Messrs. C. W. Dixey & Son, of 3, New Bond Street, and 20, Welbeck Street, W., showed some well-furnished cases of test-lenses, notably one

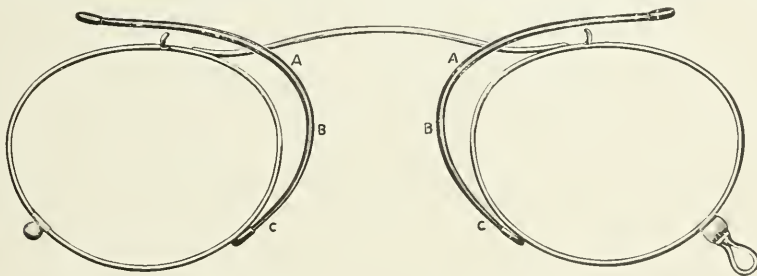


completed to Mr. Ernest Clarke's specification, with spherical and cylindrical lenses in eighths of a dioptré to 1.00 D., in quarters to 5.00 D., and in half dioptries to 20.00 D. This extensive assortment of lenses, together with prisms, etc., was contained in a handsome mahogany case, measuring 26 inches by 22 inches. It is shown in the figure. Another exhibit was a box of standard spherical lenses for neutralizing. These had been verified at the National Physical Laboratory, and were marked in the exact power of each lens to hundredths of a dioptré. Some new reading types came in for a share of attention. They were contained in a neat leather case, were beautifully printed, and others could be substituted for them when the originals became soiled. Their price



was 3s. 6d. Other exhibits by Messrs. C. W. Dixey included a new pattern trial frame (see figure), with a novel and ingenious device for adjusting the bridge, Dr. Maddox's prism verger, Mr. Treacher Collins's binocular magnifier, and an ophthalmic lamp on stand, with shunt resistance. Lastly, there were specimens of round-eyed tortoiseshell spectacles, a curious and comfortable reversion to days long gone by. Samples of modern lenses and of rimless work, for which the firm is famed, together with one or two rough models of projected instruments, completed an interesting exhibit.

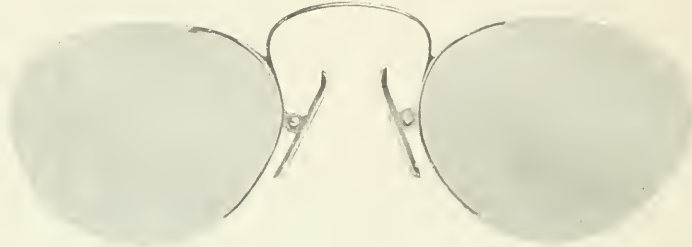
Messrs. George Spiller, of 3, Wigmore Street, W., showed the "orbital eye-glass frames" designed by Mr. Rayner Batten. This may be described



as a new method of holding eye-glasses on the face by fitting from the base of the bridge of the nose and round to and under the eyebrow with a small wire branch (see figure, ABC). By this means the glasses are kept in place rigidly, entirely



obviating any drag upon the skin. The wire branches are more or less concealed from view by the eyebrow. They appear to be suitable for most people who are not able to tolerate ordinary forms of pince-nez. Another



novel exhibit was the so-called "Uniflex" rimless pince-nez, without obstruction in the lenses. This is effected somewhat on the same principle that a dentist crowns a tooth. A most useful appliance was the "Spillerflex" rimless eyeglasses, without holes or screws in the lenses, thereby enabling the wearer to change a broken lens in a few seconds without the aid of any tool. It is shown in the figure.

The exhibit of **Messrs. H. F. Angus & Co.**, of 83, Wigmore Street, W., in addition to microscopes, microtomes, Grübler's stains, etc., in which they specialise, comprised various applications of the Lovibond tintometer to ophthalmological work, such as testing for signal blindness and colour perception generally, recording the exact depth and tint of coloured spectacle lenses numerically, etc.

The firm also showed the various modifications and additions to their spectacle fitting machine (the original model of which was shown last year) suggested by twelve months' practical use. This machine, which takes a series of facial measurements, is used in conjunction with an actual cast of the nose. Such elaboration may seem at first glance superfluous, but it appears worthy of attention, more especially in cases where ordinary methods have failed to give comfort.

The method of testing for signal blindness is new, and although exhibited tentatively, and more in the nature of a suggested method than as a commercial article, should certainly be taken into account in any conference called together to thresh out this knotty problem. Briefly, the method consists in using an actual signal lamp diaphragmed down to give the same size image on the retina as the usual 8-inch diameter signal bullseye gives at 800 yards. Behind this diaphragm are inserted a series of fogs, the character of the fog inserted being described to the man being examined before the resultant colour is displayed; the answer, which should be given instantly, is limited to one word—white, red, or green. The series of fogs are not artificial approximations, but matches of actual fogs obtained by means of the Lovibond tintometer and a standard light. This method removes, as far as possible, the confusing factor of colour ignorance, and also introduces for the first time the factor of intelligent appreciation of the influence of any given meteorological condition on the signal colours—that is to say, it takes into account the fact that the recognition of a signal colour in a dense fog is an intelligent act; there is no doubt that many men in a dense yellow fog would correctly name the green signal, but boggle at the same colour shown them in the laboratory in the ordinary methods of testing. The description of the fog before exhibiting the colour calls this intelligence into play.

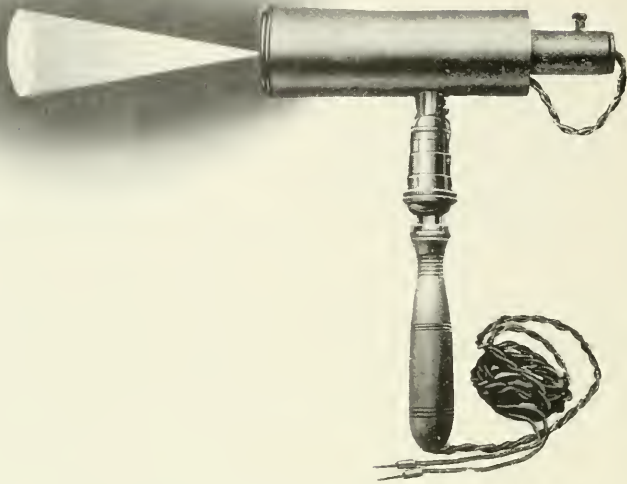
An important exhibit was by the **Uni-Focal Company, Limited**, of 188, Strand, London, W.C. That firm showed solid invisible bifocals of exquisite workmanship. These lenses are formed of one solid piece of hard glass, have only one index of refraction, and are free, as any lenses can be, from chromatic aberration. Convex combinations only are recommended, owing to the impossibility of obtaining any centre in concave invisible bifocals, whether fused, solid, or cemented. It is interesting to note that these lenses are manufactured in England by a novel system of grinding, in which the old tools have no share. Hitherto the output has been small, on account of the technical knowledge required of the workmen. But the Company have now made such arrangements as will allow of a practically unlimited production, and they further announce the fact that from March 14th, 1910, the price will be reduced by about 30 per cent. Another exhibit, a new form of cataract glass, the so-called "Luxe Featherweight," was described in *THE OPHTHALMOSCOPE* of September, 1907. As we then said, this kind of lens will recommend itself to surgeons for the use of their better-class patients. Among the various other exhibits of this firm may be mentioned the "Uni-Bifo" Lens Measure, by which it is possible to measure + and - curves to within .03 dioptries, the "Uni-Bifo" and Centreing Instrument, which enables the centres to be rapidly and correctly located, and the "Uni-Bifo" and "Luxe" machines by which the new method of lens grinding, which has rendered optical perfection in one piece bifocals possible, is carried out.

The feature of the Exhibition was, perhaps, the very attractive stall of **Messrs. E. B. Meyrowitz**, of London (1A, Old Bond Street, W.), Paris, and New York. The Edridge-Green colour perception lanterns and classified wool tests were on view. The former were exhibited with lamps illuminated from the electric light mains and from a 4-volt battery. They were of the new vertical pattern, with scale hidden from the examinee and detachable illuminating portion. The colour discs were the same as the other patterns which are now so well known. The pocket test, which was exhibited for the first time, consists of 19 small cardboard discs upon which are threaded wools numbered, so as to correspond with the arrangements described in Dr. Edridge-Green's book on *Colour Blindness and Colour Perception* (1909). They are arranged so that one group contains no reds, another no blues, another no greens, etc., while still others are all red, all blue, all green, and others contain all these colours. The test provides a convenient method of examination for colour blindness, in a portable form.

**A NEW PROJECTION LAMP.**—This is on the same principle as the luminous retinoscope, but of a larger diameter, and without the mirror for turning the vertical beam to the horizontal. The projected disc is about 3 inches diameter at  $1\frac{1}{2}$  meters. It is made to fit the Moorfields pattern bracket.

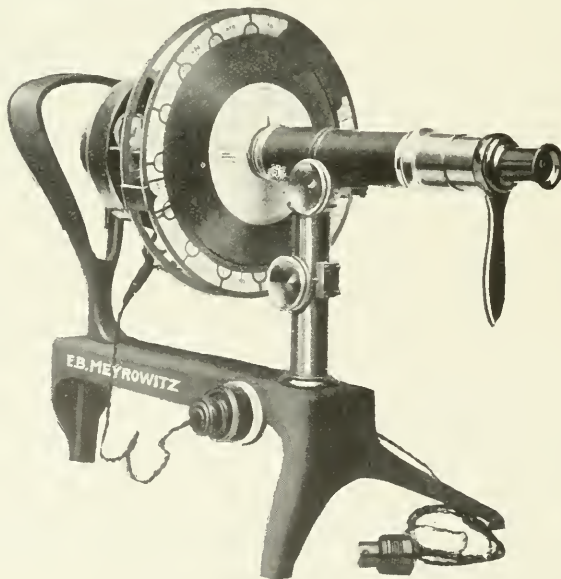
The projection lamp is made for either hand or bracket, and consists of an optical lantern which takes the form of a brass cylinder,  $5\frac{1}{2}$  in. by  $1\frac{3}{4}$  in., in which are mounted lenses and a small electric lamp. The beam projected is of great intensity, and covers a circle 1 in. to  $1\frac{1}{2}$  in. diameter when held 12 in. from the point illuminated. By removing one lens, the projector may be used at a distance of 1 metre. When used at this distance, it is sufficiently removed from a surgeon to ensure that it will not inconvenience his movements, while it most brilliantly illuminates the eye and gives sufficient illumination to permit any operation to be performed.

**A LUMINOUS RETINOSCOPE.**—This has been constructed on the principle of the optical lantern—the light from a 2-volt lamp being collected by a short focus condenser, and the emergent rays being projected by an achromatic objective. The result is that at a metre distance a clear disc of light of  $1\frac{1}{2}$  inches



A NEW PROJECTION LAMP.

diameter, equally illuminated from centre to periphery, and without any trace of filament, is projected on the eye. It can be worked from a tiny battery fitting the waistcoat pocket. The light being a very narrow divergent beam, it should operate as a plane mirror.



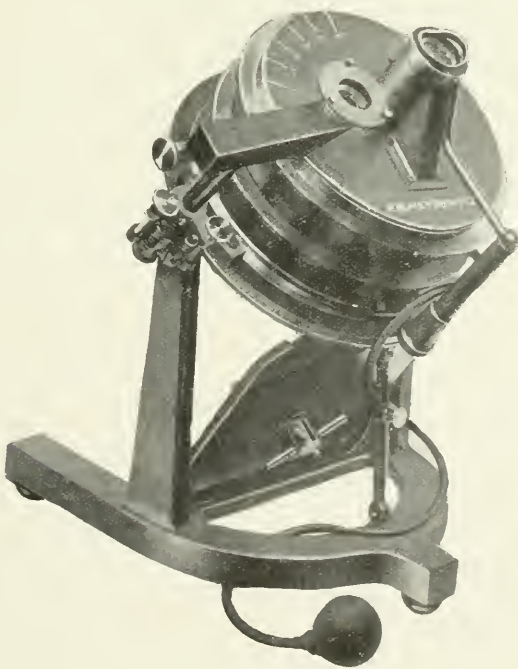
THE KERATOMETER.

The luminous retinoscope and ophthalmoscope have similar optical systems to the projector described above, and are worked by a 2 or 4 volt battery and metallic filament lamp. The light projected by the retinoscope may be varied from a line to a disc.

**THE KERATOMETER.**—A new model is being prepared which has several advantages over the present one. The scales are semi-transparent and illuminated, facilitating a quick reading, and operate concentrically instead of excentrically. The scale is a much more open one, providing closer dioptric measurements to be taken. Another improvement in the new model consists of an arrangement whereby at a certain position in the rotation of the indicators the two subsidiary images are shut out and the instrument immediately becomes a low-power corneal microscope. The stand is much improved in appearance and the whole is an advance upon the present form. It is expected that this Keratometer will be ready early in January.

The new pattern Sutcliffe Keratometer was shown mounted on a new table with raising and lowering attachment worked by a hand-wheel. This table has been specially designed for use with the Keratometer, and is most convenient to use. The lifting arrangement is free from shake and the top is cloth-covered, so that the instrument will not slip in use, as is often the case where a table has a polished top.

**THE SCOTOMAGRAPH.** This instrument will be ready for delivery during the present week.—It has been much improved since being shown at Oxford and Belfast, and an addition has been made so as to provide spectral colours for testing the sensibility of the retina.



THE SCOTOMAGRAPH.

The Tomlinson Scotomagraph has now been entirely redesigned, and many improvements have been added, among which are: fixed eyepiece, falling table for chart, making it unnecessary for the top to be taken off for chart replacement, horse-shoe stand with trunnions for tilting the instrument, and arrangement for securing stereoscopic fixation for any patient by adjustment of a prism fitted in the second eyepiece.



**ILLUMINATED NEEDLE HOLDER.**—This instrument, which is of new design, is suitable for either electrolysis (epilation), or for holding eye instruments; and is of particular use for removing foreign bodies. It is fitted with a small electric lamp and condenser, projecting a bright circle of light around the point of the instrument or needle fitted therein. This light allows a surgeon to be independent of outside illumination, so that a needle can be used with much greater freedom than if a position had to be found where the holder does not cast a shadow on the object. The lamp is of low voltage, and may be worked with advantage from the small battery described below.

The handle is made of metal, and it can be completely sterilised if desired. The jaws, which hold the needle, open sufficiently wide to take most of the standard small eye instruments, and they will close sufficiently to grip the smallest electrolysis needle. For epilation an electrode is supplied to complete the electrolytical circuit, and complete directions are provided so that the proper connections can be made. This is the first complete instrument designed for this purpose.

**LIGHT AND CAUTERY BATTERIES.**—**Portable Battery.**—This is a new type of battery specially made up in a convenient form for lighting small surgical lamps used in ophthalmic instruments. Hitherto there has been nothing but a small dry battery, which is never to be relied on unless quite new, deteriorating from the day it is made, or a heavy accumulator, which needs frequent charging and attention to keep it in order.

The battery now described is an improved form of Leclanché cell, which does not polarise, and in which the electrolyte is securely contained in such a manner that it cannot possibly spill. It has all the advantages of this form of cell with none of its disadvantages. If kept without the electrolyte, *i.e.* inactive, it will last indefinitely, and it is ready for use directly the electrolyte is added. Currents may be taken from it up to 1 ampere without losing voltage through polarisation. It is of special value to the surgeon requiring a supply of electricity occasionally for lighting a lamp or for cautery—it can be charged in five minutes and quickly emptied. In this condition, as mentioned above, it will keep indefinitely and be ready for use again immediately upon adding solution. Used in this way it will outlast any of the dry cell batteries usually used. The size of battery for ophthalmological purposes is  $5\frac{1}{2}$  by  $4\frac{1}{2}$  by  $1\frac{1}{2}$  inches, and weighs a few ounces; its three cells can be obtained connected in series for lighting, giving  $4\frac{1}{2}$  volts, or in parallel for cautery, giving  $1\frac{1}{2}$  volts and the necessary amperage. A small special rheostat can be had for use in conjunction with these batteries.

**A NEW RHEOSTAT.**—This is a new model of the American instrument introduced last year. It is London made and has several improvements upon the older pattern. It is less likely to burn out, and the adjustment being by a rack and pinion a much finer degree of variation is obtainable.

It will fit any lamp-holder on any voltage—the voltage being determined by the compensating lamp supplied; and can be used for galvanisation, electrolysis, or cataphoresis. It will light any surgical lamp from 1 to 15 volts. New pattern rheostats of English manufacture were shown, designed to pass heavier currents without heating than American instruments, also to give gradual changes in voltage in place of 10 definite contacts only. The new rheostat fits any lamp-holders on any voltage, and will light any surgical lamp between 1 and 12 volts, and 1 ampere current consumption.

**Messrs. W. Dixey**, of 14, Wigmore Street, and 552, Oxford Street, W., exhibited several items of interest, including Mr. N. B. Harman's pocket refractometer and the bar-test which bears the same gentleman's name. A pair of prismatic spectacles to be worn by the surgeon when removing small

foreign particles from the cornea was also the invention of Mr. Harman. They consisted of a pair of +5 D. sphericals combined with 9° prisms base in. In another sample the prisms were of 12°. Messrs. W. Dixey also showed a neat box containing twenty-four bifocal lenses soldered into the lower part of ordinary spectacle frames, the strengths ranging from 0.50 D. to 3.25 D. The price was 25s. The contrivance is useful in demonstrating to patients the effect of bifocal eye-glasses or spectacles. Other exhibits included trial-cases, ophthalmoscopes, and eye-glasses.

**Messrs. Theodore Hamblin, Limited**, of 50, New Cavendish Street, W., showed lenses correctly centered and otherwise, bifocal lenses with prismatic segments and correctly centered reading portion, and rimless rigid spectacles, perfectly centered and free from waviness. De Zeng's luminous retinoscopes and ophthalmoscopes, rotary cross cylinder, and improved phoro-optometer were also on view. Lens-centering and axis-finding instruments were also shown. We noticed some eye baths made of aluminium, price 2s. 6d. a dozen, and an eye shield, for use after operation, constructed of the same material. The exhibit of this firm was completed by the usual array of test types, punctometers, perimeters, amblyoscopes, and trial cases and frames. A word should perhaps be added as to the "Euphos" glass exhibited by the same firm. These glasses are stated to be a protection against the ultra-violet light rays, and as such may be useful to those who travel in sunny lands and pursue snow, aquatic, and mountain sports. They may also have a value to those who suffer from inflamed eyes, especially spring catarrh and to such as are engaged in testing electric lamps, or who are compelled to work for long under arc lamps.

Surgical instruments were well represented by **Messrs. John Weiss & Son, Limited**, of 287, Oxford Street, London, W. Many new instruments were on view, including Vacher's and de Lapersonne's sclerectomy punches, Fergus' trephine, Lagrange's fine sclerectomy scissors, and Holth's iris forceps with regulating screw for a very small iridectomy. A convenient syringe for the injection of cold paraffin wax into the lacrymal sac preparatory to removing the latter appeared to be well adapted for its purpose. A useful little appliance was a glass bottle provided with a rack for carrying Graefe's cataract knives, in absolute alcohol, when going to an operation from home. It presented a close resemblance to the bottles provided in a dressing bag for tooth-brushes, etc. Lawford's modification of Lang's solid-bladed eye speculum was shown. Its upper blade has a plate to keep up a bulging eyelid, while the lower one follows the pattern familiar to everybody in Clarke's speculum. It is accordingly a compromise between the two forms. Price, £1 1s. 0d. A convenient nickel-plated copper tray with cover containing a rack for instruments, as used at Moorfields, attracted some attention. Price, £2 2s. 0d. An ophthalmoscope with telescopic handle, as designed by Mr. N. B. Harman, appeared to be well adapted for its purpose. A useful instrument was the Weiss modification of Lüer's syringe with strong nozzle, provided with lacrymal tubes and needles for subconjunctival injections and for tapping the aqueous humour. The whole was contained in a small metal case. Among other exhibits we noticed Ziegler's knife-needles for iridotomy, their blades being 5 mm., 6 mm., and 7 mm. long respectively, Schiötz's tonometer for estimating the tension of the eyeball, and undines for irrigation of the anterior chamber after expression of cataract.

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## CORRESPONDENCE.

[While THE OPHTHALMOSCOPE will at all times welcome correspondence from its readers, the Editor does not hold himself responsible for any views expressed in this column.]

## THE TREPHINE IN THE TREATMENT OF GLAUCOMA.

*To the Editor of THE OPHTHALMOSCOPE.*

SIR,

I have to thank you for your courtesy in sending me advance copies of the article by Dr. Freeland Fergus and the Review by yourself, which are to appear in the February number of THE OPHTHALMOSCOPE.

Dr. Fergus contends that the operation I have described is the same as that described by himself. I also gather that he thinks I borrowed my ideas from him.

May I first state the circumstances under which I was led to perform the operation of trephining for glaucoma?

Before I went home on furlough in March, 1908, I had followed with very great interest the work done by Lagrange and Herbert, and had performed both their operations a considerable number of times. I obtained excellent results in successive cases, but it was borne in on me that whilst Herbert's method was tricky and difficult, Lagrange's was at times distinctly dangerous. I then conceived the idea of securing a drainage channel by means of a trephine instead of by the use of a knife, and I talked it over with two surgeons here, who, however, did not encourage me in the idea. I should, however, have tried the method on a blind eye at that time, had I not been forced to go home rather suddenly for private reasons. Whilst stopping with Colonel Herbert (I.M.S., retired) at Nottingham in December, 1908, I mentioned to him that I had a plan for obtaining a filtering scar by a new method, but I did not give him the details, as I wished to try if it was workable before I spoke of it to any ophthalmic surgeon. On my return to India I took an early opportunity of trying trephining on a glaucomatous eye. It worked so well in the first case that I did two more that morning (August 2nd, 1909). From that day forward I have performed several trephinings every week, till I have now done 140. As the conviction that the method was destined to prove serviceable strengthened, I wrote to you and told you that I was working on what I believed was a new principle, and said that I was waiting till I could furnish longer after-histories before I ventured on publication. Your reply was to the effect that you would like to hear what I was doing, and you kindly offered to publish a small paper on the subject if I would send it. I was conscious of the compliment, and at once put my figures together and sent you a short article, which you were good enough to publish in your December number. I should like to draw attention here to a fact which has, I venture to think, misled Dr. Freeland Fergus, *viz.*, that such a correspondence between India and home involves a delay of at least five and often of six weeks. At the time I sent off my article to you *I had not heard, directly or indirectly, of Dr. Freeland Fergus' work on the same lines.* Whilst dining with Major Grabbett, of the Madras General Hospital, I mentioned that I had at last sent off to you an article on trephining of the sclera for glaucoma. He, in common with many other medical officers here, knew that I had been performing the operation, and he had taken a great interest in it. He then showed me a copy of the *British Medical Journal* of October 2nd, 1909, received in Madras a fortnight later than that date, in



which appeared an account of Dr. Freeland Fergus' operation as he described it before the British Medical Association meeting at Belfast. This was my first intimation that anyone else had used a trephine for glaucoma, and came as a great disappointment to me, for it was quite clear that in the central idea of the operation I had been forestalled. I at once wrote to Dr. Fergus the letter he alludes to in his article. At the risk of being thought wearisome, I desire to deal with certain points in connection with that letter. I should not think it worth while so to do were it not for the fact that Dr. Fergus has laid considerable stress on my letter, the receipt of which he has described as "an odd coincidence." Dr. Fergus lays stress on (1) the date of that letter, (2) my having spoken of the operation I wrote of as *his* operation, and (3) my use of a von Hippel's trephine, the instrument he discussed with Professor Lagrange. I shall take these points in order. (1) As already shown, I had sent off my paper to THE OPHTHALMOSCOPE, at the request of the Editor, before I had heard of Dr. Freeland Fergus' work, and when I did hear of it, I at once wrote to him. (2) Dr. Fergus began by doing a simple trephining and went on to add an operative cyclo-dialysis. I have kept to simple trephining throughout, with the exception of a very few cases in which I found myself unable thereby to tap the chamber freely. In such cases I thrust a fine curette into the chamber, keeping it close to the sclerotic coat. I had no idea at the time that anyone else had done this, nor did the procedure find favour with me. I may add that subsequent experience (and I have now operated on 140 cases with the trephine) has shown me that with proper care, one can almost always enter the chamber and tap it freely by trephining alone. I at once recognised that the operation I had stumbled on in this way was the one Dr. Fergus was deliberately performing. In writing to him I naturally spoke of it as his operation, the more so as though my work was wholly independent of his, I saw that he had done it first and done it deliberately. When Dr. Fergus says that the operation which I described in THE OPHTHALMOSCOPE is "precisely the same as that which he has now done for some time for the relief of glaucoma," I regret that I cannot agree with him, but it is a matter we both must leave to ophthalmic surgeons. Indeed, the Editor of this journal has already expressed himself quite clearly on the subject in the February number. Dr. Freeland Fergus can hardly claim a right to "run with the hare and hunt with the hounds." If he gave up simple trephining *he gave it up*. Whether he was well advised to do so, is a question I should not venture to dogmatise on. Time and a review of our results in the future will best decide that question. (3) As Dr. Fergus states so positively that I mentioned in my letter that I had used a von Hippel's trephine, I can only express my regret that I must have inadvertently made a slip of the pen. I have never used any other trephine than Bowman's. Indeed, we have no other in the Hospital, and I do not think that I have ever had a von Hippel's trephine in my hand in my life. I mention this because Dr. Fergus lays so much stress on the coincidence of my having used the very instrument he had discussed with Lagrange.

I have never corresponded with Professor Lagrange, nor have I ever met any one who has seen Dr. Fergus perform his operation, nor had I ever discussed the operation with any one who has seen it performed outside of Madras. I cannot but express my regret that Dr. Fergus did not adopt the more usual course of writing to me direct, before he published the article I am now answering. Had he done so, he would have had little difficulty in realising that I had no intention to claim from him any credit that was justly his due. The knowledge that I am five weeks from home by return post



would have explained much of what has appeared strange to him. It is also to be regretted that none of the ophthalmic journals had made any mention of Dr. Fergus' work. Had they done so, I should have seen it. Although I take in and carefully read a large number of them, I have never seen any mention of it in any one of them. I missed it in the *British Medical Journal*, as I rarely look at that paper.

There are a few minor points I should like to discuss.

Dr. Fergus passes severe strictures on the fault of rushing into print on too short an experience, and at once proceeds to exculpate himself for so doing on the strength of Mr. R. W. Doyne's invitation. You, Sir, are aware that I too meant to wait before I sent my paper, but that you yourself kindly asked me not to delay further before so doing. There is a little proverb about "Sauce for the goose," which should have softened Dr. Fergus' criticisms.

Dr. Fergus comments on "another important respect in which he differs from Major Elliot in so far as he did not think over the operation for a prolonged period, as *he* (Major Elliot) *seems to have done*." The italics are my own. Again I shelter myself under the ægis of a piece of the world's accumulated wisdom, which deals with the fact that there are times and places "where angels fear to tread." In a matter so important to the future of my patient, I should always want to feel full justification before I embarked on a new procedure; I should not dream of jumping into it till I had given the matter very careful thought from every point of view.

Dr. Fergus makes a very curious admission when he says "I have never had any doubt as to the necessity of entirely removing the piece of sclera marked off by the trephine. *I have never done it in any other way, so cannot speak from experience*, but I think it certain that if the portion of tissue is not removed, that cicatrization will at once take place and the effect of the operation be entirely lost." The italics are my own, but I am not responsible for the construction of the above sentence which I have given verbatim. Is Dr. Fergus aware that Col. Herbert (late I.M.S. retired), has for years advocated the isolation of a piece of the sclerotic coat, which is, however, left *in situ*? Is he unaware that both Colonel Herbert and many others who have followed his method have thus obtained satisfactory filtering scars in a number of the cases operated on? Such considerations would make most men hesitate to rush in with an opinion so slenderly founded. The most complete refutation of it is, however, to be found in the experiment which anyone can make. In the few cases in which I left the disc *in situ*, the free flow of aqueous fluid around it completely interfered with union and the disc was floated up into the subconjunctival œdema clear above the bed from which it had been cut. What the eventual result will be I cannot say, though I can form a good idea; but I can at least say with certainty that Dr. Fergus' hasty guess that "cicatrization will at once take place and the effect of the operation be entirely lost," is totally unsupported by such observations as I have so far been able to make.

In conclusion, I have no wish to claim priority, but I wish to assert most positively that I did my work in absolute independence of Dr. Fergus. As we have both been anticipated (as shown by Mr. Sydney Stephenson in the February number of *THE OPHTHALMOSCOPE*) times and again, it is hardly worth while arguing over priority. It was never my wish to do so. I shall hope shortly to put some figures on record to show that simple trephining, to which I have pinned my faith, is sufficient to effect all the lowering of tension we require. A comment of some interest on the subject was a letter received two mails back from Colonel H. Herbert, a well-known authority on operation for glaucoma, asking me whether I had not found the *lowering of tension too great, and too*

*prolonged.* In any case I fail to see that an operative cyclo-dialysis can be of much use. It is a question on which I am open to correction *by the results of experiment*, but I submit that it is unlikely such a cyclo-dialysis would be permanent. If not permanent, of what value is it? If the operation is incorrectly done and the trephine fails to open the anterior chamber at once, one may be driven to resort to it; but the operation is then a patchy one. Last Thursday I trephined six eyes in half-an-hour, reaching the anterior chamber at once in every case and affording relief of tension. The fact that the whole operation took me an average of 5 minutes each on the six cases shows how simple and easy it is.

Yours, etc.,

R. H. ELLIOT,

MAJOR, I.M.S.

M.D. LOND., F.R.C.S. ENG.,

Government Ophthalmic Hospital,  
Madras, S. India.

February 14th, 1910.

## A NEW INSTRUMENT FOR PRODUCING A SUB-CONJUNCTIVAL FISTULA.

*To the Editor of THE OPHTHALMOSCOPE.*

DEAR SIR,

Since forwarding to you my communication in regard to a new instrument for producing a subconjunctival fistula, I have ascertained that the term "sclerostome," by which I designated the instrument, is incorrectly used. I therefore desire to substitute for it the term "sclerectome." The term "sclerostomy," as a designation for the operation, however, seems to be unobjectionable. Although the matter of a name is of minor importance, I regret that, as you inform me, my letter of February 9th did not reach you in time for the alteration to be made in my paper.

Very truly yours,

F. H. VERHOEFF, M.D.

Massachusetts Charitable Eye and Ear Infirmary,  
233, Charles Street, cor. Fruit Street, Boston.

March 5th, 1910.

## NOTES AND ECHOES.

### Deaths.

WE regret to announce the death of Arthur William Wheatly, consulting surgeon to the Western Ophthalmic Hospital, Marylebone Road, London, W. Mr. Wheatly did not devote himself exclusively to ophthalmology, although he paid considerable attention to that specialty. He had worked as clinical assistant at Moorfields. His contributions to ophthalmology included an account of a case of epithelioma of the conjunctiva, and also one of cataract extraction in a patient affected with neuro-retinitis.

WE regret to announce the death of Samuel B. St. John, of Hartford, Conn., who succumbed to angina pectoris on December 21st, 1909. Dr. St. John was

a distinguished exponent of our speciality. He was Secretary of the American Ophthalmological Society from 1888 to 1908, and he occupied the presidential chair in 1909. From 1881 to 1905, Dr. St. John was lecturer on ophthalmology in Yale University.

Francisco Gosetti died on October 26th, 1909, at Merlango, near Treviso, Italy at the age of 71 years. He held the post of ophthalmic surgeon to the Civil Hospital at Venice. Gosetti published communications upon injuries of the eyeball, spasm of accommodation, chronic glaucoma, herpes corneæ, jequirity, and pemphigus of the conjunctiva, and was besides the inventor of a new operation for cataract.

Charles P. Geudtner, a prominent Chicago ophthalmic surgeon, died on January 5th last from pneumonia, aged 44 years.

\* \* \* \*

#### Honours.

DR. LANDOLT, of Paris, has been selected to deliver the Bowman Lecture of the Ophthalmological Society of the United Kingdom in 1911.

Congratulations to George E. de Schweintz, who has been elected president of the College of Physicians of Philadelphia, a post filled by few ophthalmic surgeons.

Another prominent American ophthalmologist in the person of John E. Weeks, has been elected president of the Medical Society of the County of New York.

\* \* \* \*

#### Appointments.

DR. H. H. B. CUNNINGHAM has been appointed examiner in ophthalmology and otology in the National University of Ireland.

Mr. Malcolm L. Hepburn has been appointed assistant surgeon to the Royal London Ophthalmic Hospital (Moorfields.)

Dr. T. Harrison Butler, known by name at least to every reader of THE OPHTHALMOSCOPE on account of his abstracts of German literature, has been appointed ophthalmic surgeon to the Warneford Hospital at Leamington, *vice* W. Allport, resigned.

Another correspondent of THE OPHTHALMOSCOPE, Dr. Percival J. Hay, has been appointed ophthalmic surgeon to the General (Beckett) Hospital, Barnsley.

Mr. Percy Fleming has been appointed lecturer on ophthalmology at the London School of Medicine for Women, rendered vacant by the death of Miss Ellaby.

Mr. E. Treacher Collins has been appointed an extern examiner in ophthalmology for 1910, at the Queen's University of Belfast, and Drs. C. E. Shaw and W. M. Killen, local University clinical examiners in the same subject.

Dr. de Denig has been appointed professor of ophthalmology at Columbia University, New York.

Dr. Rupprecht, assistant in the University Eye Klinik in Breslau, has succeeded Dr. Heymann as *Oberarzt* of the eye department of the *Diakonissenanstalt* in Dresden.

Dr. Bellinzona has been recognized as *privat-dozent* in Pavia, Dr. Martin Zade in Jena, and Dr. R. Schneider in Munich.

Among minor appointments may be mentioned those of Dr. A. G. McAuley, as clinical assistant in ophthalmology to the Royal Victorial Hospital at Montreal, and T. C. R. Archer as senior, and W. Victor Corbett as junior ophthalmic house surgeon at St. Thomas' Hospital, London.

\* \* \* \*

A Sign of the Times. FROM a recent number of the *Ophthalmic Record* (Chicago) we learn that the Vermont State Board of Medical Registration has agreed not to receive applicants after January 1st, 1911, unless they have received instruction in simple refraction.

\* \* \* \*

E. Jaeger. ON February 28th a monument to the memory of Eduard Jaeger, Ritter von Jaxthal, was unveiled by Professor Ernst Fuchs in the Hall of the University of Vienna.

\* \* \* \*

The Hunterian Lectures. TWO Hunterian Lectures were delivered by Mr. George Coats in the theatre of the Royal College of Surgeons of England on March 14th and 16th last. Mr. Coats took as his subject "Congenital Abnormalities of the Eye." That portion of the first Lecture which deals with the interesting and obscure subject of congenital anterior staphyloma is published in the present number of THE OPHTHALMOSCOPE.

\* \* \* \*

The Beit Memorial Fellowships for Medical Research. WE congratulate Dr. F. W. Edridge-Green, upon whom a Beit Scholarship of the value of £250, tenable for three years, has recently been bestowed. He will undertake a research into various problems connected with vision and colour vision.

\* \* \* \*

The next Census. A BILL has recently been introduced in the House of Commons by Mr. John Burns for taking the census of Great Britain on Sunday, April 2nd, next year. The Bill, one of fourteen clauses, provides details that must be filled up by the several occupiers of dwelling houses, of which one is a return of any person who is blind, deaf, imbecile, or lunatic. It is much to be desired that those returned as blind might be classified in some simple way. We understand that *pourparlers* with regard to this point have recently been exchanged between the Royal College of Surgeons of England and the Statistical Department.

\* \* \* \*

Professor Leber. PROFESSOR THEODORE LEBER, of Heidelberg, celebrated his seventieth birthday on February 28th last, when his bust was unveiled in the presence of a numerous assemblage of his friends and admirers. T. K. G. Leber, who was born in 1840 at Karlsruhe, obtained his doctorate in 1862, and became assistant to



Professor Hermann Knapp. In 1863 he studied at Vienna with v. Arlt and v. Jaeger, and later worked in Berlin with A. v. Graefe and R. Virchow, and in Paris with Liebreich. In 1871 Leber was appointed extraordinary professor in Göttingen, and, soon after, ordinary professor. He declined calls to Erlangen in 1872 and to Würzburg in 1878. In 1890, however, he succeeded Otto Becker at Heidelberg. In 1892 Leber delivered the Bowman Lecture of the Ophthalmological Society of the United Kingdom. Of Leber's literary and scientific labours it is scarcely necessary to say a word to English readers, to whom they are well known and by whom they are widely appreciated. May his scientific and social activities continue for many years!

\* \* \* \*

THE LXXIV volume of v. Graefe's *Archiv für Ophthalmologie* has recently made its appearance, and it is devoted to communications made in Professor Leber's honour by his friends and pupils, to what, in fact, is termed in Germany, a *Festschrift*. This number of the *Archives* runs to 364 pages, is profusely illustrated, and contains thirty scientific communications.

\* \* \* \*

IN reply to a request for a subsidy owing to the increased number of patients sent by the Medical Officer of the Bath Education Authority, the Bath Eye Infirmary has received a reply that the Authority cannot subsidize charitable institutions.

\* \* \* \*

MR. HENRY PENFOLD, late of Hove, Consulting Surgeon to the Sussex Eye Hospital, left estate of the value of £13,487.

Mr. William Ilbert Hancock's will has been proved at £17,480.

\* \* \* \*

# THE OPHTHALMOSCOPE.

A MONTHLY REVIEW OF CURRENT OPHTHALMOLOGY.

VOL. VIII.—No. 5.]

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[TWO SHILLINGS.

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## ORIGINAL COMMUNICATIONS.

## COLOUR BLINDNESS.\*

BY

F. W. EDRIDGE-GREEN, M.D., F.R.C.S.

LONDON, ENGLAND.

I SHALL, in this paper on colour blindness, adhere to the traditions of the Royal Society of Arts, in giving special prominence to the practical side of the subject. As, however, it is through my theory of vision that I obtained all my facts of vision and colour blindness, I must first give a short account of it in order to make what I shall have subsequently to say intelligible. The following is the theory which I have adopted in order to explain vision and colour vision.

A ray of light impinging on the retina liberates the visual purple from the rods, and a photograph is formed.

The rods are concerned only with the formation and distribution of the visual purple, and not with the conveyance of light impulses to the brain.

The decomposition of the visual purple by light chemically stimulates the ends of the cones (very probably through the electricity which is produced), and a visual impulse is set up which is conveyed through the optic nerve fibres to the brain. If it were possible, in a case in which the spectrum appeared of similar length and brightness to both, for a normal-sighted person and a colour-blind one to exchange eyes, the normal-sighted would still see colours properly and the colour-blind would still be colour-blind. There are cases in which the visual purple (or some part of the nervous apparatus) is differently constituted, and is not sensitive to certain rays of the spectrum. The character of the impulse set up differs according to the wave-length of the light causing it. Therefore, in the impulse itself, we have the physiological basis of the sensation of light, and in the quality of the impulse the physiological basis of the sensation of colour. The impulse being conveyed along the optic nerve to the brain, stimulates the visual centre, causing a sensation of light, and then passing on to the colour-perceiving centre causes a sensation of colour. But though the impulses vary in character according to the wave-length of the light causing them, the colour-perceiving centre is not able to discriminate between the character of adjacent impulses, the nerve cells not being sufficiently developed for the purpose. At most, seven distinct colours are seen, whilst others see, in proportion to the development of their colour-perceiving centres, only six, five, four three, two, or one. This causes colour-blindness, the person seeing only two or three colours instead of the normal six, putting colours together as alike which are seen by normal-sighted to be different. In the degree of colour-blindness just preceding total, only the colours at the extremes of the spectrum are recognised as different, the remainder of the spectrum appearing grey.

You will see in the representation of a section of an eye, which has been thrown upon the screen, that there is a membrane lining the back of the eye. This membrane is called the retina, and it is upon the outer layer of the retina that the images of external objects are formed. By outer layer I mean the layer of the retina which is furthest away from the front

\* Read before the Ninth Ordinary Meeting of the Royal Society of Arts, London, on February 9th, 1910.

of the eye, so that light has to pass through all the other layers before it reaches the sensitive portion. This sensitive layer consists of two elements, which are called respectively, on account of their shape, the rods and cones. You will notice a little dip in the centre of the retina—this is the fovea, and it is the region of most distinct vision. In the fovea only cones are present. External to the fovea the rods are arranged in rings round the cones, and the number of rods to cones increases as portions of the retina further from the fovea are taken, except at the extreme periphery, where, again, only cones are found. In the outer segment of each rod there is a rose-coloured substance, the visual purple, which is photo-chemically sensitive to light. This visual purple is not found in the cones, but only in the rods. It was for this reason that it was considered to be not essential to vision because it was absent from the cones, and only cones are to be found in the fovea, the region of most distinct vision. The rods and cones project into a thin layer of fluid, which is kept in its place by a membrane, the external limiting membrane. It occurred to me that the visual purple was diffused into this liquid, and on being decomposed by light, stimulated the cones, thereby setting up a nerve impulse which caused the sensation of vision. This theory gave an immediate explanation to a large number of facts. I found on examining the retinas of some monkeys, which had been kept in the dark, that the fovea was the reddest part of the whole retina, but the visual purple was between but not in the cones.

When light falls upon the eye by reflection from an object in the field of vision a small actual image of the object is formed on the retina. Now this image may differ in three ways—in size, intensity, and colour. It may also occupy a different position on the retina, that is, the image may be formed on the fovea or on a more peripheral part of the retina. The intensity or brightness of the image on the retina is a very important factor in a test for colour blindness. We all know how difficult it is to recognise colours at a distance when they are not sufficiently bright. The peripheral part of the retina is, with a normal-sighted person, colour blind with colours of low intensity, but this colour blindness disappears when the intensity is increased. There are many persons who see similarly with the central part of the retina, and who, whilst being able to sort wools with the greatest ease, are not able to distinguish a red light from a green one at a distance at which the difference is strikingly obvious to normal-sighted persons. It is not a simple matter to calculate the intensity of an image on the retina. There has been much error on this point, many being under the impression that the law of inverse squares immediately gives us the required result. This law applies only to a point source. If, however, we have a point source or a source sufficiently small to be practically regarded as such, it is only the light which falls on the cornea or front of the eye which will vary inversely as the square of the distance. Again, only the light which is able to get through the pupil will affect the retina, and the pupil dilates, thereby allowing more light to enter the eye when the eye is accommodated for a distant object. The amount of light passing through the pupil will be brought to a focus on the retina, and the further away the object is the smaller will be the image on the retina; therefore, though the light will diminish, the image will be smaller and relatively more intense. We have also, in considering the apparent intensities of lights, to know the condition of the atmosphere, as well as the state of the thermometer and barometer. The size of the object on the retina is of very great importance, as the smaller the object the fewer will be the number of cones affected. There are many persons who can distinguish between two coloured lights when their surfaces are sufficiently large, but immediately fail



to distinguish between them when their size is reduced. This fact is of immense practical importance, because a light seen by an engine driver or sailor only occupies a small portion of the field of vision.

Absorption of certain rays by the media of the eye will also affect the brightness of the image, and this absorption will vary with different persons and different wave-lengths of light. When certain waves of light are absorbed in excess of that which is normal, the eye is placed in the position of that of a normal-sighted person with those waves reduced to the same intensity. Certain varieties of colour-blindness in which the light perception is reduced for certain wave-lengths have a luminosity curve which corresponds for that part to the normal at a lower intensity.

Cases of colour-blindness may be divided into two classes, which are quite separate and distinct from each other, though both may be present in the same person. In the first class there is light as well as colour loss. In the second-class the perception of light is the same as the normal sighted, but there is a defect in the perception of colour. In the first class certain rays are either not perceived at all or very imperfectly. Both these classes are represented by analogous conditions in the perception of sounds. The first class of the colour-blind is represented by those who are unable to hear very high or very low notes. The second class of the colour-blind is represented by those who possess what is commonly called a defective musical ear. Colour-blind individuals belonging to this class can be arranged in a series. At one end of this series are the normal sighted, and at the other end the totally colour-blind. The colours appear at the points of greatest difference, and I have classified the colour-blind in accordance with the number of colours which they see in the spectrum. If the normal sighted be designated hexachromic, those who see five colours may be called pentachromic; those who see four, tetrachromic; those who see three, trichromic; those who see two, dichromic; and the totally colour-blind, monochromic. There are many degrees included in the dichromic class. There may or may not be a neutral band, and this is widest in those cases approaching most nearly to total colour-blindness. I have recorded a case of a patient who was colour-blind with one eye. It is an interesting fact that for form vision the colour-blind eye was much the better of the two, and he could recognise fine lines in the spectrum with this eye which were not visible to the other. He saw the two ends of the spectrum tinged with colour and the remainder grey. It will be noticed that his colour sensations were limited to the extreme red and the extreme violet, namely, those colours which present the greatest physical contrast to each other. Neither the red nor the violet appeared of the nature of a primary colour, but gave the impression that they were largely diluted with grey. A theory of colour vision must account for a case of this kind and also for the other varieties and degrees of colour-blindness. The trichromic are a very important class, and any theory must account for the fact that they see yellow as red-green, and blue as violet-green. As we should theoretically expect, when there is shortening of the spectrum the centres of the colours are moved towards the unshortened side.

I will now show on the screen, some representations of pictures painted by colour-blind persons.

The upper picture is the copy, and the one below is the one which has been painted by the colour-blind artist. He has been given a selection of colours on plates, and from them has selected the one which he thought appropriate in each case. It will be noticed that the mistakes made are characteristic of the colour perception of the person painting them. Whenever I show these pictures—I am asked why it is that these characteristic mistakes

should be made, and that the true colour of the object is not used instead. This undoubtedly would be the case if the artist were allowed to match the colours by directly comparing them. But he is not able to do this; he looks at the copy and decides what colour an object is, and then looks for colour with which to paint it.

A man rarely uses a hue which he does not see as a definite colour, and therefore it has been quite possible for me to pick out those who are more or less colour-blind in the exhibitors of the picture gallery. For instance, if a trichromic has to paint a yellow object he will decide after looking at it, whether it be a red or green in his estimation and represent it accordingly. He will be greatly influenced by the nature of the colours in its immediate proximity, because simultaneous contrast is increased in the colour-blind. Thus, he will certainly represent a yellow which is adjacent to a red as green and a yellow, which is adjacent to a green as red.

### Evolution of the Colour Sense.

We must assume that the visual centre was developed first, and that at one time in past ages all objects appeared without colour, as in a photograph. When the colour-perceiving centre was first developed, the rays differing most in wave-length were the first to be distinguished, and so the spectrum appeared nearly all grey, or neutral, but with a tinge of red at one end and a tinge of violet at the other. As more and more cells were added to the centre it was not necessary that the rays should differ so much in refrangibility before a difference was seen, and so the red and violet gradually invaded the grey or neutral band, until at a certain point they met in the centre of the spectrum. Such cases are called dichromics. The next stage of evolution of the colour-sense is when the colour-perceiving centre is sufficiently developed to distinguish three main colours in the spectrum. The third colour, green, appears in the centre of the spectrum, that is, at the third point of the greatest physiological difference of refrangibility of the rays. In accordance with the prediction of the theory, I found a considerable number of persons who saw the spectrum in this way, about 1·5 per cent. of men. The trichromic see three main colours in the spectrum—red, green, and violet. They usually describe the spectrum as consisting of red, red-green, green, green-violet, and violet. They do not see yellow and blue as distinct colours, and are therefore in continual difficulty over them. There are very few of the tests in general use which can detect them, especially if names be not used. They will usually pass a matching test with ease. An examination with the spectrum shows that their colour-perception is less than the normal in every part, though the curve has the same general shape. The three trichromics described in my recent paper on "Observations on Hue Perception" each saw ten consecutive monochromatic patches in the spectrum instead of the eighteen or nineteen seen by those who see six colours in the spectrum. It is easy to show that the trichromic are dangerously colour-blind. They will mark out with my colour-perception spectrometer a patch containing greenish-yellow, yellow, and orange-yellow, and declare that it is absolutely monochromatic. When tested with coloured lights they find great difficulty with yellow and blue. Yellow is continually called red or green.

There are several other degrees of colour-perception, and it may be well to say a word or two about them, though I class all above the trichromic with the normal-sighted for practical purposes, as they are not dangerously colour-blind, and can always distinguish signal lights correctly. In the next stage of evolution four colours are seen in the spectrum, and the fourth colour appears

at the fourth point of greatest difference of refrangibility, namely, at the orange-yellow of the hexa-chromic or six unit people. These persons I have designated "tetrachromic" because they see four distinct colours in the spectrum, that is red, yellow, green, and violet. They do not see blue as a definite colour, and are continually classing blues with greens; they usually prefer to call blue purplish-green. In the next stage in evolution there appeared those who see five colours in the spectrum--red, yellow, green, blue, and violet, blue being now classed as a definite colour. These are the pentachromic group. These people pass all the tests in general use with ease. They, however, have a definitely diminished colour perception compared with the normal or those who see six colours in the spectrum. They mark out in the spectrum only fifteen monochromatic patches instead of eighteen. They cannot see orange as a definite colour; for instance, they can never tell whether a strontium light, which is red, or a calcium light, which is orange, is being shown them.

In the next stage of evolution, orange is recognised as a definite colour, and thus we get the hexachromic or normal group, and as we should theoretically expect, the yellow of the pentachromic is now split up into two colours--orange and yellow. The last stage of evolution which we appear to have reached are those who see seven colours in the spectrum, and the additional one is called indigo. These constitute the heptachromic group, and this seventh colour appears at the exact point at which it should appear, according to my theory, namely, between the blue and the violet. Persons belonging to this class have a marvellous colour-perception and memory for colours. They will indicate a certain shade of colour in the spectrum and then next day will be able to put the pointer at precisely the same point, a feat which is quite impossible to the ordinary normal-sighted person. They see a greater number of monochromatic patches in the spectrum than the hexachromic, but the curve has the same form. The marking out of the heptachromic does not appear correct to those who see six colours; for instance, the blue appears to invade the green, and the indigo does not seem to be a definite colour at all. If, however, we bisect the blue of the seven-colour man, and then bisect his indigo, on joining the centres we get the blue of the six-colour man, showing most definitely that the blue has been split up into two fresh colours. It will be noticed that there is room for much further evolution, and we could go on splitting up the spectrum indefinitely if only we had the power to distinguish these finer differences, but as a matter of fact I have never met with a man who could see more than twenty-nine monochromatic patches in the spectrum, and there are really millions, though by monochromatic patches I do not mean twenty-nine separate colours.

Tests for colour-blindness are of two kinds; namely, those which are used for the purpose of ascertaining whether colour-blindness be present or not, and those which are used when the enquiry is made for some practical purpose.

I have devised a spectrometer for estimating colour-perception. In the focus of the instrument are two movable shutters, either of which is capable of moving across the spectrum. By means of the two shutters any given portion of the spectrum can be isolated. Each shutter is controlled by a drum graduated in wave-lengths, so that the position of the edges of the shutters can be known. The accuracy of the graduation is to 5 Angstrom units. We can ascertain with this instrument the exact size of portions of the spectrum which appear monochromatic and their varying size with different persons. We can also determine the limits of visibility on both sides of the spectrum, the exact



size and position of the neutral band in different dichromics, and the position of the most luminous portion of the spectrum. This instrument gives us a key to the colour perception of any person.

I now come to the test which should be used for sailors and engine-drivers.

On account of the arrangement of signals by sea and land, it is necessary that persons employed in the marine and railway services should be able to recognise and distinguish between the standard red, green, and white lights in all conditions in which they are likely to be placed. \*

It is not only necessary to find out whether a person is able to distinguish between the red, green, and white lights, but to ascertain as well whether he thoroughly understands what is meant by colour, and the individual characteristics of red, green, and white respectively. Too little attention has been paid to this in constructing tests for colour-blindness, and those who have had much practical experience in testing for this defect, are aware of the ignorance which exists among uneducated persons with regard to colours. Many are under the impression that every shade of colour is a fresh colour, and others have the most novel ideas with respect to colour. It is necessary that a sailor or engine driver should be able to recognise a red, green, or white light by its character of redness, greenness, or whiteness respectively; that is to say, that the examinee has definite ideas of colour, and is able to reason with respect to them. All persons who are not able, through physical defect, to have definite ideas of the standard colours, and to be able to distinguish between them, must be excluded from the marine and railway services. In constructing a test for colour-blindness, we must not forget the element of colour-ignorance, because an engine-driver or sailor has to name a coloured light when he sees it, not to match it. He has to say to himself, "This is a red light, therefore there is danger;" and this is practically the same as if he made the observation out loud. Therefore, from the very commencement we have colour-names introduced, and it is impossible to exclude them. Making a person name a colour is an advantage, because the colour-name excludes the element of shade. If, as some persons have said, testing by colour-names is useless, then the whole series of colour-names is useless. But if I say to a friend, "That tile is red," and he agrees with me, it is evident that one object, the colour of which is by him classed as red, is also classed as red by me. The ordinary colour-names, red, blue, yellow, and green, form excellent bases for classification. The engine-driver is told that red is a "danger" signal, green a "caution" signal, and white an "all right" signal. Therefore it is very necessary that he should know what is meant by these colours. It must be noticed that it is on account of there being so many variations in hue that such great difficulty has been found in constructing an adequate test for colour-blindness, as it is the definite colours, and not the variations of them of which we wish to know the number. It will be seen that it is not merely a matter of shade as far as the colour-blind are concerned, but a distinct difference in tint. The normal-sighted could divide the green of the spectrum into yellow-green, green, and blue-green; and would, in the majority of cases, be able to range all greens under these three classes. The dichromic colour-blind see two colours only, and name colours in this way.

We wish to exclude all those individuals who are included in the following three classes:—

I. Those who see three or fewer colours in the spectrum.

II. Those who, whilst being able to perceive a greater number of colours than three, have the red end of the spectrum shortened to a degree incompatible with their recognition of a red light at a distance of two miles.

III. Those who are unable to distinguish between the red, green, and



white lights at the normal distance through insensitiveness of the retinal-nervous apparatus when the image on the retina is diminished in size.

The dichromic regard green and red as almost but not quite identical, and this fact is one which it is nearly impossible to make a person who has not thoroughly studied colour-blindness, comprehend—either the colour-blind himself, the public, or an unqualified examiner. They find that many colour-blind persons are able to recognise different colours and correctly name them, and, therefore, set down the mistakes made to want of education in colours.

It is astonishing with what accuracy many colour-blind (dichromic) persons name colours. I have met with several who were nearly always correct when they named a colour. One educated adult, in particular, had become so expert that he was often able to baffle attempts made by his friends to show that he was colour-blind. When I asked him the names of various coloured objects, he was nearly always correct, and did not content himself with using the ordinary colour names, but employed such terms as “cerise.” He told me the means he adopted; he said all colours appeared modifications of blue and yellow. The brightest and purest yellow was yellow; slightly darker and not so pure, green; darker still, red. The brightest and most typical blue, violet; less bright, blue; blue with a tinge of gray (dirty-blue), purple; very impure blue, cerise. This colour appeared to him blue by day, yellow by gaslight.

The following will show how it is that the colour-blind are able, in ordinary circumstances, to distinguish between the colours included in one of theirs. All colours have not a similar degree of luminosity; thus, yellow is much the brightest colour. Red, yellow, and green have, to the dichromic colour blind, as far as colour is concerned, a very similar appearance. They are not exactly alike in colour.

It is very important that persons belonging to the second class should be excluded, and yet none of the ordinarily used tests detect them. The rays of red at the extreme left of the spectrum are the most penetrating, as may be seen by looking at a light or the sun on a foggy day, or through several thicknesses of neutral glass. It is chiefly by these rays that we recognise a red light at a distance, and it is therefore of great importance that a sailor or engine-driver should be able to perceive them. The third class is one in which a person is able to distinguish colours easily when they are close to him, but fails to distinguish them at a distance, owing to insensibility or to the nerve fibres supplying the central portion of his retina being impaired. As a light at a distance occupies the central portion of the visual field, it is essential that the corresponding portion of the retina should be normal. We also do not wish to exclude persons who, though partially colour-blind, have a colour-perception sufficient for all practical purposes. If the persons to be tested have to distinguish between the standard red and green lights, these lights should be used as the basis of the test, because, if any other test were used, we should still have the same problem before us, from a practical point of view. A sailor might (with reason) object to any other test, and say that because he could not distinguish between a green and a gray wool, it is no reason why he should be unable to distinguish between the red and green lights.

The candidate's capacity in this respect may be tested with a lantern, which I now show. By using a lantern with slides containing standard red and green glass, we can obtain the necessary colours. But there are few colour-blind persons who cannot distinguish between the red and blue-green lights at a short distance. A simile will show how they are able to do this.—If a normal-sighted person were to take two coloured glasses, green, and blue-green, and place them in a lantern at a short distance, he would be able to

distinguish between them with ease. He would see as much difference between them as the colour-blind (dichromic) do between the standard red and green. But as the distance became greater he would find more difficulty in distinguishing between the green and blue-green, and it would be very unsafe to trust a ship or a train to his powers, especially when one light only was shown. The dichromic colour-blind find the same difficulty with ordinary red and green. The intensity and character of the light should, therefore, be changed without the knowledge of the candidate. \* This may be done effectually with certain kinds of neutral glass. The glasses I use, like a mist or fog, are most transparent to the red rays at the extreme left of the spectrum, and, when several glasses are used together, the light allowed to pass through them has a distinctly reddish hue. The normal-sighted easily recognise coloured lights that have had their intensity diminished by these neutral glasses, but the colour-blind find great difficulty in distinguishing the colours in these circumstances. The test consists in naming coloured lights, which are shown unmodified and modified, as they would be under ordinary atmospheric conditions. The neutral glasses represent fog, the ground glass mist, and the ribbed glass rain.

The following are the objections to the wool-test, which is the official test of the Board of Trade.—The material for the purposes of a colour-test is not a good one. First, we have the difficulty of obtaining correctly-coloured wools, then there is the great difficulty in obtaining duplicates of these wools; because two colours look alike it is not by any means necessary that they have the same composition. The probability is that if the dyes used be different the colours will differ in composition. When a good set of wools has been obtained, the colours are liable to fade; and this fading will take place more rapidly in the case of some colours than in others. This will prevent the results of examinations made with one set of wools from being uniform and comparable. Then, the wools will become soiled, and this will happen in a very short time if the testing be conducted chiefly among the lower orders.

Then, the greens which it is necessary to pick out will become more soiled than the others, and so afford a mark of distinction to the colour-blind, who, not being confused by the striking differences of colour, are able to notice minutiae of this kind. It will be found, in testing a large number of persons, that those who are colour-blind will try to find some distinguishing mark in the wools selected by others. There are other points connected with the material which enable the colour-blind to pass the test. They may distinguish between brown and green by the touch but not by the colour. The relative luminosity of the colours of wools is very great, and forms a distinguishing point to the colour-blind. An ordinary red-green colour-blind will not put a yellow wool with a green or red one, but he will put yellow glass with green or red glass.

The test colours used are a light green and a light shade of rose. A red is also used as a confirmatory test. A pure green is one of the worst possible colours to choose for a first test. If the blue-green be removed, colour-blind persons may easily pass through the test without detection.

Whom are we to reject by this test? If we reject all the (so-called) partially red and green blind, we shall reject many persons who are practically competent. If we only reject the (so-called) completely red or green blind, we shall allow many persons who are dangerously colour-blind to officiate as signalmen. The test is more theoretical than practical, the main object of testing for colour-blindness being apparently lost sight of: thus, it has to be proved that a man who puts a confusion colour with a green wool cannot distinguish between a red and a green light. Then, when a man has put

a confusion colour with a green wool there is still the point to be decided whether he has been judging more by shade than by colour. A light-green and a greenish-gray are very much alike to an uneducated man. In my experience, an ignorant pentachromic or tetrachromic colour-blind (that is, a person who is partially colour-blind, but not colour-blind to an extent necessitating his rejection) is more likely to fail than an educated dichromic (red-green colour-blind). A person with central scotoma or insensitiveness to colour when occupying a small portion of the field of vision, will escape detection if examined by this test. For example, I examined a person with central scotoma with my pocket colour test (in which small pieces of coloured material are arranged in rows), and found him colour-blind with regard to red, green, and grey. I then examined him with Holmgren's test, and he went through it correctly with the greatest ease. As a light at a distance occupies the central portion of the field of vision, these persons will be found to recognise colours when close to them, but not when they are at a distance. The red end of the spectrum may be considerably shortened, so much so that a person may scarcely be able to distinguish red from black. It is obvious that this will not prevent him from matching a light-green wool with other green wools. It is not by any means an efficient test. We cannot reject by it those persons who would be dangerous as sailors or engine-drivers, and only those persons. It is also possible to instruct a red-green colour blind so as to enable him to pass through this test with ease. I have taught an uneducated red-green colour-blind (not, of course, a candidate for one of the services) to pass through this test with less than five minutes' instruction. This man had previously put the ordinary confusion colours with the test green, and painted a picture for me, representing the grass with vermilion, believing that he had made a very good match. After my instructions he picked out the correct colours with ease and certainty. It must not be supposed that these instructions were elaborate. I first told him to notice the exact colour of the test green, and when picking out the colours, to be guided by colour only, and not in any degree by shade. Having picked out the correct colours, I showed him that they formed a series commencing at a very light green, and ending at a dark one, I told him, therefore, to avoid all colours of the same shade as the test green, and to note how many wools I had picked out. I then picked out a typical blue, yellow, and red, and placed them beside the test green. I then told him that he need only know four colours—red, yellow, green, and blue—and must pick out the exact hue of green, carefully avoiding all greens which inclined to yellow or blue.

In conclusion, I may mention that this test has in practice been a failure. I have examined a great many dangerously colour-blind men who have passed it, and many others have had the same experience. In the Board of Trade report for 1908 it will be seen that of those who were rejected by the wool-test, and who appealed, over 53 per cent. were found to be normal-sighted, and to have been rejected wrongly. I hope that a Committee will soon be appointed which will examine the facts fairly and carefully.

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## ON TRACHOMA-BODIES.

BY

HANFORD MCKEE, B.A., M.D.,  
MONTREAL, CANADA.

FROM time to time, numerous micro-organisms have been put forward as the cause of trachoma, without any definite proof, until workers in this subject became convinced that, without newer methods, the cause of trachoma would not be found.

It remained for Halberstädter and v. Prowazek to make the first great advance in our knowledge of the ætiology of this disease. These observers, while working in Java on syphilis, found in the epithelial cells in cases of trachoma inclusions which were constantly present. In many of the cells these granules coalesced, and formed bodies which covered the nucleus like a cap. Prowazek believed them to be parasitic, and called them "*Chlamydozoa*." They inoculated orang-outangs, and presumed contagiousness from the appearance of follicles in the epithelium. Their report was published in 1907, and since that time their findings have been corroborated by several workers. Sceptics were not wanting, however, and many said that they had seen similar bodies in other forms of conjunctivitis. It was difficult at first, without good photographs, to know just what Halberstädter and v. Prowazek described as the trachoma-bodies, especially as they noted, too, dark-blue spots close to the nucleus—the "plastin clots" of v. Prowazek, who believed these latter represented the reaction of the cell to the intruding microbe. It is possible that these plastin cells have been confused with the real trachoma-bodies.

Fuchs, from the work of his assistant, who has found these bodies in large numbers of fresh and old cases, believes their presence to be of value from a diagnostic point of view.

Others, as Addario, believed them to be artefacts composed of sedimented staining matter, mixed with degenerated cells in the course of histological preparation. Lodato, who has seen them in spring catarrh, was of similar opinion, but as Clausen, at the last International Congress noted, Addario and Lodato had not submitted any microscopic specimens in support of their contentions. The bodies which they described were not identical with trachoma corpuscles; had been seen by him also in various forms of conjunctivitis; and can be distinguished readily, after some practice, from the v. Prowazek bodies, which he describes as specific.

We have been greatly interested in this subject in Montreal, because we sometimes see fairly active trachoma here. While waiting for a suitable case to present itself, and to master the *technique*, about fifty cases of other conjunctival inflammations were examined. In none of these were we able to find the trachoma-bodies.

About three weeks ago an adult male, a Roumanian who had been in Canada one year, presented himself at the out-door department of the Montreal General Hospital with acute mild trachoma. The conjunctiva was scraped with a dull scalpel, and the material thus obtained was well smeared over glass slides. These were dried in the air, fixed in absolute alcohol for ten minutes, and stained for twenty minutes with the new Giemsa stain, to one drop of which fifteen drops of distilled water were added. This method is simple, and is very easily carried out in an out-patient department. The results were very satisfactory. In every slide prepared during a period of eight days, the so-called trachoma-bodies of



v. Prowazek were found. They are round bodies, smaller than cocci, lying within the protoplasm of the epithelial cells. They are sometimes grouped in masses, which, as a rule, are close to the nucleus of the cell. Naturally, these masses vary considerably in size. Sometimes, these bodies were seen surrounded by a halo or mantle. This form is supposed to represent a stage in their development. A piece of the palpebral conjunctiva was excised and fixed in Zenker's solution. Some very beautiful slides stained with eosin and methylene blue were obtained. Numerous trachoma-bodies were found within the epithelial cells. Regarding the variation in size, a point which may be of interest is that, in the slides prepared on the seventh day, the bodies were much larger than those in the slides prepared during the first few days, also in two positive cases which we had, the halo-forms were found in the initial slides.

Previous to examining these cases I had a case of trachoma where I thought the bodies should be easily demonstrated, but from faulty methods, or some other reason, they were not recognized. In eight cases of active trachoma examined, we have found the v. Prowazek bodies in seven.

Whether the inclusions are parasitic or not, or whether they are the causative agent of trachoma, has not yet been determined, but their specific nature is now fairly well established. This means a great deal. Diagnosis is rendered easy and certain. We see cases at the Montreal General Hospital, where clinically a diagnosis would be difficult, but by excluding diplobacillary conjunctivitis by means of bacteriological methods, the task is greatly lessened. Now, with the aid of the trachoma-bodies, diagnosis will be put on a very definite basis. With that the disease will be defined with exactness, and the old question of follicular conjunctivitis *versus* trachoma settled.

For the micro-photographs, shown in the accompanying plate, I am indebted to Dr. S. B. Wolbach:—

Fig. 1.—Shows two trachoma-bodies, magnification of 2,000 diameters.

Fig. 2.—Shows two bodies related to two nuclei, magnification of 1,000 diameters.

Fig. 3.—The same as Fig. 2, but a magnification of 2,000 diameters.

Fig. 4.—Shows one small body in the protoplasm of the cell, some distance from the nucleus, magnification 1,000 diameters.

Fig. 5.—Same as Fig. 1, magnification 1,000.

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## CLINICAL NOTES.

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### A PECULIAR APPEARANCE OF THE EYES AFFECTING TWENTY-ONE MEMBERS BELONGING TO FOUR GENERATIONS OF A FAMILY.

BY

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ON May 4th, 1909, a boy, aged  $6\frac{1}{2}$  years, was brought to the Ophthalmic Department of the Queen's Hospital for Children, London, on account of some difficulty in reading for any length of time under which circumstances his eyes were stated to "water."

ON TRACHOMA BODIES.

BY  
HANFORD MCKEE, B.A., M.D.

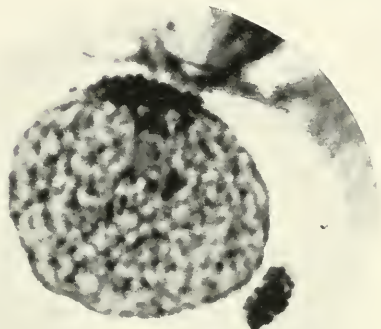


Fig. 1

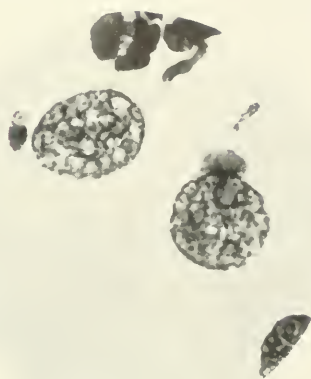


Fig. 2

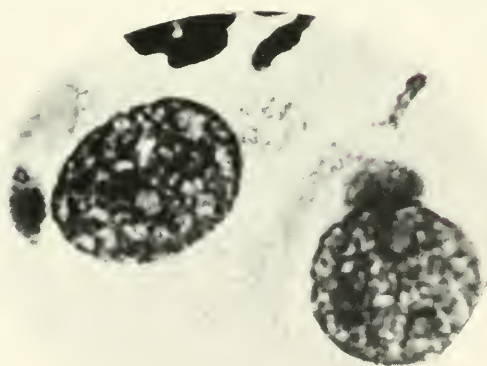


Fig. 3

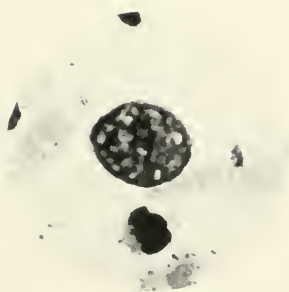


Fig. 4

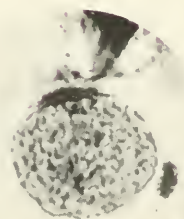


Fig. 5



On casual examination, I was struck with the peculiar appearance of both eyes. The sclera presented a curious, uniform, bluish tinge, perhaps best described as "leadens." The appearance extended to the cornea, on the one hand, and beyond the equator of the eyeball as far as could be seen, on the other. It showed no accentuation in the ciliary zone.

It was further noted that the lad was of dark complexion; that a small embryontoxon was present towards the upper margin of each cornea; that the fundi were well-pigmented; and, lastly, that the optic discs were of oval shape, and that a congenital crescent (the so-called "Fuchs' coloboma") was present at the lower margin of each papilla.

The trouble of which the child complained was doubtless due to the compound hyperopic astigmatism  $\frac{+ 1.0 \text{ D. Sph.}}{+ 2.0 \text{ D. Cyl. } 90^\circ}$  that was present.

The mother, who accompanied the child to the Hospital, showed a complete arcus senilis in each cornea, the appearance of which was heightened by a discolouration of the eyeball similar in every way to that presented by her son.

Noting my interest in the condition, the mother told me that many members of her family had "blue whites to the eyes." I further gathered that although her name was "Solomon," yet there was no Hebrew blood on her side of the family, the name being accounted for by her second marriage having been contracted with a Jew.

After what the mother had told me, it seemed worth while to enquire somewhat more closely than I had done into this curious family inheritance. The results of that enquiry are set forth in the genealogical table appended to this communication.

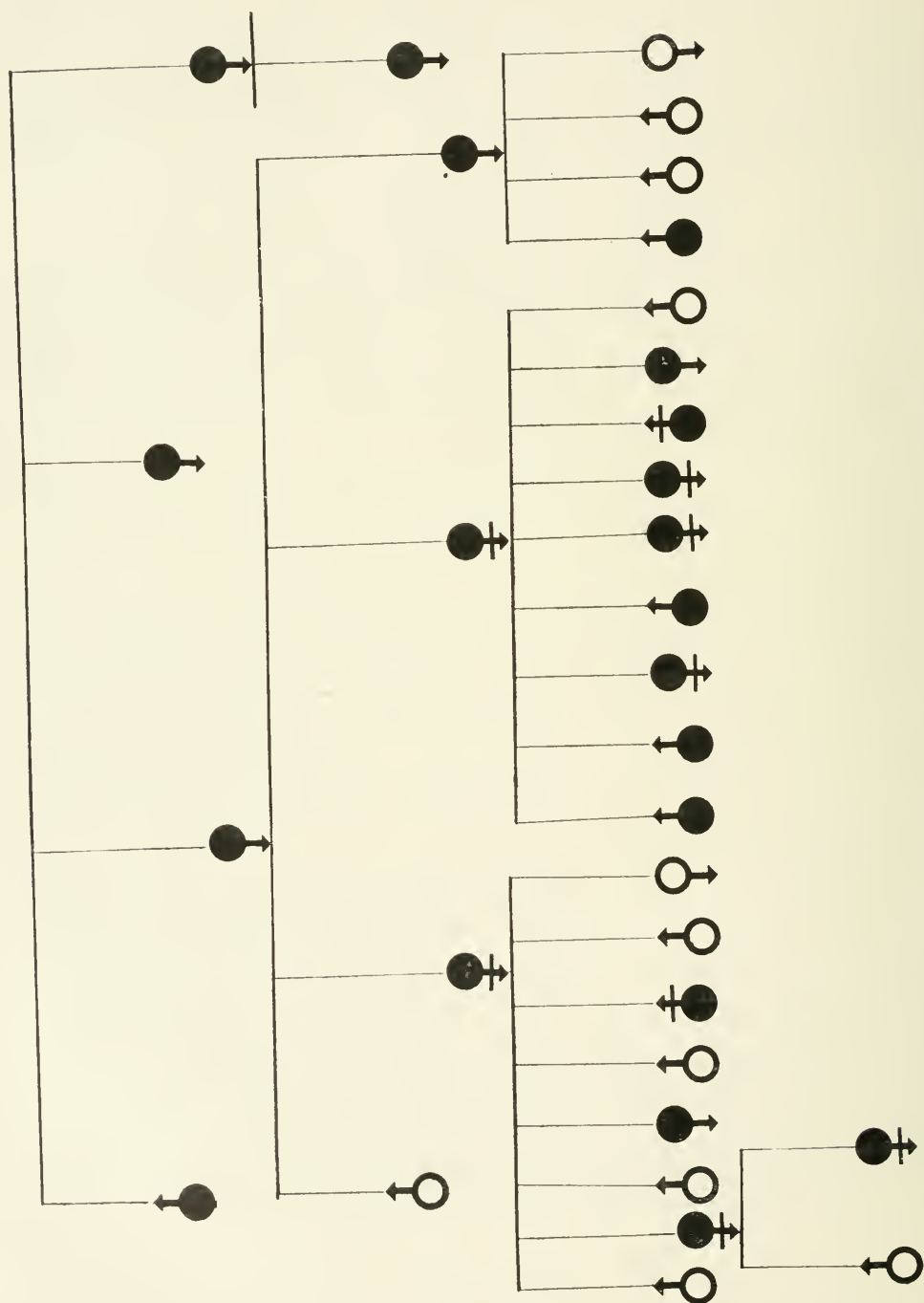
As an exact survey of the "tree" will show, the defect has been traced through four generations of the family, comprising in all 32 individuals. Of that number, 21 are known to have, or to have had, eyes similar in appearance to those of the original patient, and of these I have seen 9, representing the 2nd, 3rd, and 4th generations. The 32 individuals included in the "tree" consist of 16 males and a like number of females. Of the former, 7, or 43 per cent., are affected, while of the latter, 14, or 87 per cent., are affected. The complexion, in general, was fair. As already stated, the mother of my patient had been married twice—first, to a Christian, and, secondly, to a Jew. It is interesting to remark that she transmitted the ocular peculiarity to her children by both husbands.

**Remarks.**—My case is not unique. Professor A. Peters, of Rostock, has recently described (*Klin. Monatsblätter für Augenheilkunde*, Februar, 1908) a similar if not identical anomaly, which affected four generations of a family. Three of the patients were examined by Peters, who is inclined to ascribe the appearance to a congenital thinning of the sclera. In four cases embryontoxon was associated with the discolouration of the sclera. Peters has also referred to the condition in his work upon congenital defects and diseases of the eye (*Die Angeborenen Fehler und Erkrankungen des Auges*, 1909, p. 80). Again, Mr. G. Winfield Roll brought a case of "Sky-blue Sclerotics" under the notice of members of the Ophthalmological Society of the United Kingdom on June 11th, 1908. I was not fortunate enough to see the case, and as its title alone is given in the *Transactions* of the Society (Volume XXVIII, Fasc. 3, 1908, p. 287), I can merely surmise that it may belong to the same category as the cases spoken of in the present communication.

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For explanation of symbols see THE OPHTHALMOSCOPE.  
April, 1910, p. 281.



## THREE CASES OF ENOPHTHALMOS.

BY

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Within the space of about a month I have had the opportunity of examining three cases of enophthalmos.

The first two cases were of congenital origin; the third, which is of less interest, was the result of an accident.

CASE 1.—G. G., age  $4\frac{1}{2}$  years. As soon as the child was born it was noticed that the left eye was abnormal. Delivery was non-instrumental; vertex presentation. The left eye is deeply sunken in the orbit, and, in consequence, the left palpebral slit is narrower than the right. If the right eye be closed, the left eye follows an object upwards and downwards quite normally, but it can neither be adducted nor abducted: it remains still in the median position when the child is asked to follow the movements of an object in the horizontal plane. If the right eye remain open and the gaze directed to the right the left eye moves upwards and slightly inwards. When the gaze is directed to the left, the left eye is not abducted, but remains still in the median position. The refraction is hyperopic to the extent of 5 and 6 dioptres, with one dioptre of astigmatism. The left eye is of the same size as the right, and neither shows any fundus changes. The child was ordered:—

R. + 4 D. sph.	L. + 5 D. sph.
+ 1 D. cyl. ax. vert.	+ 1 D. cyl. ax. vert.

He cannot read, but appears to have good vision with each eye.

This case may be regarded as one of congenital absence of the rectus externus and internus; their absence makes too much room in the orbit, and allows the eye to fall back. Owing to the absence of these muscles, there can be no abduction nor adduction of the left eye when the right eye is covered; but when the right eye is open the left superior rectus acts in association with the muscles of the right eye when the right eye is abducted, and so the left eye is drawn upwards and slightly inwards. This movement is, however, only an associated one, and cannot be initiated by the left eye alone.

CASE 2.—F. W., age 66. The appearance of the left eye is exactly as in case 1. There is marked enophthalmos, with consequent narrowing of the palpebral slit. The abnormality has been present from birth. The left eye moves freely upwards, downwards, and inwards, but abduction ceases at the middle line. The eye is moved quite easily from extreme adduction to the middle position, but absolutely no further. V.R. =  $5/30$ , c. +  $2.5 = 5/5$ . V.L. =  $5/50$  c +  $3 = 5/5$ . The fundus in each eye is normal. The patient sought advice on account of loss of peripheral vision of the right eye. The field of vision shewed extreme concentric contraction, and was typical of "traumatic neurosis." He had a very severe accident seven years ago, causing paralysis of limbs, which lasted a long time.

In this case the exophthalmos is more difficult to explain than in Case 1. Probably there is a rudimentary rectus externus, and its attachment to the globe is abnormally far back. This small, deeply-placed muscle would leave an abnormal amount of room in the orbit, and allow the globe to fall back. The fact that the insertion was far back would greatly reduce the range of abduction, for as soon as the origin of the muscle was in a line joining the origin and the centre of rotation, all further eversion would be impossible.

CASE 3.—This case, although in outward appearance the same as the first two, is of an entirely different nature.

A. S., a driver, was kicked in the face five months ago by a horse. There are still scars on the temple from the wounds caused by this accident. After the accident, he was laid up for some time, and, ultimately, some pieces of bone were removed, including part of the orbital process of the malar bone.

Now there is marked enophthalmos, and the palpebral slit is narrow. The eye movements are normal in every respect. V.R.  $5/5$ . V.L.  $5/10$ . Refraction emmetropic. The retinal vessels on the left side are abnormally tortuous.

The loss of vision on the left side might have been due to malingering, with a view to obtaining compensation for the accident.

In this case the enophthalmos was due to the loss of bone making the orbit too large, and thus allowing the eye to fall back.

## MYOPIA AND PARALYSIS OF ACCOMMODATION FOLLOWING INJURY TO THE FRONTAL SINUSES.\*

BY

A. W. STIRLING, M.D. (Edin.), etc.

ATLANTA, GEORGIA, U.S.A.

The following case is perhaps of interest sufficient to deserve record :

In September, 1906, J.T.—, age 42, was struck by a stone on the forehead. I saw him within a couple of hours, and at once had him conveyed to a hospital. While he was under a general anæsthetic, I found that the frontal sinus on each side had been freely opened, without fracture of the inner plate of the skull. Communication between the sinuses and nostrils was free. The bones were replaced, and after the sinuses had been well irrigated, a stitch was put in at either end of the wound. He was able to go home in four days, and in a fortnight more, the discharge from the wound had ceased.

Beyond a rough examination, in order to see whether any damage had been done, the eyes were not carefully investigated until the swelling of the lids had nearly gone; *i.e.*, a week after the receipt of the wound. Under homatropine and cocaine, the vision was as follows: (Oct. 1st) R.  $\frac{6}{36}$  no H.m. c.—2.0 D. Sph.  $\frac{6}{9}$  ( $\frac{3}{4}$ ). L.  $\frac{6}{5}$  no H.m. With the ophthalmoscope, the veins were rather full in the right fundus. The vision of the R.E. had previously been excellent, and only the day before the wound was received, the patient had made 40 out of a possible 50 with a rifle at 600 yards, shooting with that eye. On Oct. 2nd (without a mydriatic) R.V.  $\frac{6}{60}$ —3.0 D.  $\frac{6}{5}$ , and on the 3rd after homatropine and cocaine for one hour, R.V.  $\frac{6}{24}$  c.—1 D.  $\frac{6}{5}$ . On the 12th the patient, who was himself a medical man, observed when watching a game of base ball, that the right pupil was dilated and inactive, and when I saw him on the 13th it was still slightly dilated, but acted well to light and convergence. As there was complete paralysis of accommodation on Nov. 3rd, I ordered—3 D. Sph. for distance, and +.75 D. Sph. for near-work, which gave the best results.

I did not see the patient again until March, 1908, when I found that the right pupil acted well to light and to accommodation, and that the following glasses gave the best results:—

For distance R. —2.5 D. Sph.  
—1.0 D. Cyl. axis 135°  $\frac{6}{5}$

Near R. —.75  
+1.0 D. Cyl. axis 45°=J. 1 at 15".

There were never any visible signs of dislocation of the lens.

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\* Case reported to Ophthalmological Section of the Southern American Medical Association, November, 1909.

## TRANSLATIONS.

## UPON THE FINDING OF CHLAMYDOZOA IN NON-GONOCOCCAL OPHTHALMIA NEONATORUM.\*

BY

L. HALBERSTAEDTER,  
OF BERLIN.

AND

S. V. PROWAZEK,  
OF HAMBURG.

Under the name "Chlamydozoa" we have elsewhere described in trachoma a group of micro-organisms which have certain peculiarities in common. Their grouping leads to a peculiar and characteristic reaction of the cell involved. The intra-cellular parasites, together with the reaction products of the cell, constitute together a specific cell influence as regards trachoma. Such cell-inclusions are regarded as specific in vaccinia and in rabies, although views as to the signification of the forms concerned are still divided. We have described characteristic cell-inclusions in the epithelial cells of the trachomatous conjunctiva not only of man, but also of anthropoid apes artificially infected with the disease. These we regard as specific for trachoma and intimately connected with the ætiology of that disease. In these inclusions we distinguish the finest grains, which we spoke of as micro-organisms, "Chlamydozoa," from the products of reaction of the cells attacked, "plastin clots." Since the publication of our first observation on this subject a large number of communications have appeared, which confirm in so many cases the existence of the cell-inclusions described by us in trachoma that their occurrence can no longer be doubted. Especially, can the inclusions be found in recent cases or in those which have been subjected to little or no treatment. The morphological appearance of the cell-inclusions has been described by nearly every observer in the same terms. But there is still a difference of opinion with regard to the signification of these bodies. Another question is, whether the forms described by us in trachoma occur also in other mucous membranes affected with non-trachomatous diseases, and especially in such the ætiology of which is known. A large number of investigations have been made into the point, since all writers who have searched for them in trachoma have at the same time conducted a number of control investigations as to their occurrence in other affections of the conjunctiva. In so far as concerns the demonstration of our epithelial inclusions, with the exceptions to be mentioned immediately, they have not been found in diseases which exclude all connection with trachoma: at all events, when another ætiology is to be certainly proved for the affection concerned.

Stargardt has stated that in 140 non-trachomatous controls he once found the epithelial inclusions described by us in a case of ophthalmia neonatorum (*Versamml. d. Ophthal. Ges.*, Heidelberg, 1908). This observation stood alone until recently, when Heymann (*International Medical Congress at Budapest*, 1909) was able to confirm Stargardt's findings in four cases of ophthalmia neonatorum. Heymann investigated seven cases of gonorrhœal conjunctivitis (confirmed clinically and bacteriologically), of which three were put on one side, on account of prolonged treatment. Large numbers of cell inclusions were discovered in the remaining four cases. In the light afforded by his investigations, Heymann brings the inclusions into connection with the gonorrhœic process, regards them as representing the reaction of the cell to the gonorrhœal virus, and, lastly, combats their parasitic nature, as announced by ourselves.

\* From *Berliner Klinische Wochenschrift*, Oktober 11, 1909.



Heymann has himself pointed out the necessity of looking for the inclusions in mucous membranes other than the conjunctiva liable to be attacked by gonorrhœa.

Such investigations we have undertaken, with results that we now report :

In gonorrhœa of the male urethra we have endeavoured to collect as many epithelial cells as possible by scraping the anterior part of the canal with a platinum loop. The material thus obtained was stained in the ordinary way by Giemsa. In thirty-five fresh cases, either not treated at all, or having been under treatment for a very brief period, we never succeeded in finding the epithelial inclusions described by us in trachoma, although in all the cases numerous gonococci were demonstrable. In the same way we have examined twenty older cases in men, where gonococci, once present, had disappeared. Here, also, the results were negative as regards epithelial inclusions. Ten fresh cases of cervical and urethral gonorrhœa in women, with abundant gonococci, were examined, and so were fifteen cases of chronic gonorrhœa, all without epithelial inclusions.

These investigations made it abundantly clear that the epithelial inclusions described by us were not a constant accompanying or following appearance of the gonorrhœal process. Nevertheless, it may be said that these forms occur only in the conjunctiva, an objection that is not valid, as will be shown immediately. Indeed, we have investigated preparations from gonorrhœal conjunctivitis in the newly-born, employing the same methods as were used in the examination of trachomatous conjunctiva, and thereby fulfilling Heymann's injunction, namely, to remove as much as possible of the secretion. In three of the cases gonococci were demonstrated at the beginning of the disease, but at the time of our investigation neither gonococci nor epithelial inclusions could be discovered. On the contrary, in five cases (three untreated and two treated for a few days only), although gonococci could be demonstrated in abundance, yet no epithelial inclusions could be found. There were the same negative findings in some instances of very slight conjunctivitis in newly-born children, where bacteria were absent. On the other hand, in five cases, which clinically were regarded as ophthalmoblennorrhœa, we found our cell inclusions in large numbers. Three of these babies were born in the Maternity Department of the Eppendorf Hospital, Hamburg, where, when symptoms of inflammation were noticed on the sixth or seventh day after birth, repeated examinations of the discharge for gonococci were made with negative results. Cultures on blood-agar also remained sterile. In smears from the conjunctiva, which had been often treated, the epithelial inclusions were very abundant, but gonococci could not be demonstrated. In two additional cases gonococci could not be found, but chlamydozoa were numerous.

By these investigations the complete independence of the epithelial inclusions and the gonorrhœic process is made certain, since we find, on the one hand, positive gonorrhœa without inclusions, and, on the other, inclusions with the certain absence of gonorrhœa. From this it follows that the inclusions are absolutely independent forms. With regard to the morphology of the inclusions in non-gonococcal ophthalmia neonatorum, according to our present investigations made with the ordinary Giemsa stain, they closely resemble the trachoma bodies ; so much so, indeed, that a distinction between them is scarcely possible on morphological grounds alone. It appears that the grains in cases of conjunctivitis are more widely distributed in the cells, and that they seldom present an areola. Upon the ground of these slight differences, however, a differentiation at the moment of examination is not possible. The expression "*Trachom-körperchen*"—which, by the

way, we have never employed—must accordingly be abandoned. On the contrary, the designation "*Chlamydozoen*" is correct, and as far as the foregoing investigations are concerned we have no reason for allowing the meaning which we have attributed to the bodies to lapse.

That the chlamydozoa found in trachoma and in certain cases of non-gonorrhoeal ophthalmia neonatorum can hardly be distinguished morphologically is not very wonderful, seeing that this often occurs when dealing with bacteria that are quite well known, and that in protozoal diseases, morphology frequently leaves us in the lurch. For example, we cannot always distinguish from one another *Entamoeba histolytica*, *E. tetragena*, *E. coli*, or, further, the treponema of syphilis and yaws, ape and human malaria, proteosoma and halteridium hæmoproteus, the protozoa in Aleppo boil and Kalar-azar, and so forth. There exists scarcely a single protozoon, every stage of which can always be determined with certainty. When dealing with protozoa, even the results of cultivation and the inoculation of pure cultures may leave us uncertain. According to Mayer and Prowazek, one can no longer infect with halteridium flagellata cultivated in owl's blood, just as little as with the treponema culture obtained by Schereschewsky and Mühlens. On the other hand, by the inoculation of apes with trachoma we have obtained proof that we have to deal with an infective virus.

Therefore, we maintain firmly our views, and extend them only in so far as to admit that there exists a certain group of non-gonococcal cases of blennorrhœa in the newly-born (to which Stargardt's case belongs) in which chlamydozoa are demonstrable. The same regard as epithelial inclusions, such as are found in trachoma.

In conclusion, we may add that we have had the opportunity of examining microscopically the genitalia of the mothers of two babies affected with non-gonococcal ophthalmia. In one of these women we succeeded in finding identical epithelial products in preparations taken from the orifice of the urethra. We merely mention this observation in passing, but may say that we are pursuing further investigations into the point.

SYDNEY STEPHENSON.

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## THE RUDIMENTARY OPHTHALMOSCOPIC STIGMATA OF HEREDITARY SYPHILIS.\*

BY

Professor O. PARISOTTI

(ROME, ITALY).

IN June last I was appointed by the Civil Tribunal in Rome to adjudicate in a case between a Workmen's Insurance Society and a workman.

Under the difficult circumstances the recognition of the rudimentary stigmata of hereditary syphilis was of the greatest assistance to me in coming to a conclusion. It is common knowledge that it is owing to Dr. Alberto Antonelli (Paris) that we appreciate the value of this important means to diagnosis, and it is with pleasure that I publish this account, because it gives me an opportunity to render homage to the merits of a dear friend.

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\*From the *Rivista Italiana di Ottalmologia*, November and December, 1907.

The following are the conditions under which the case came under my notice :

The workman, a bricklayer, while standing in a trench, occupied in removing spent lime therefrom, received a splash of the material in his right eye. He was treated immediately. Inflammation followed, which, according to all the medical certificates, did not go beyond hyperæmia, and had, according to the statement of the Company's oculist, disappeared by the forty-fifth day after the accident, and probably much earlier.

At the time of this last visit the injured man complained of diminution of the visual acuity and made a claim for indemnity, but the doctor declared that if the diminution were real it must have been in existence before, since there was no rational explanation to connect the loss of sight with so slight a traumatism.

The injured man at once consulted another surgeon, who relying on the fact that the patient had been an excellent shot (as proved by his military certificates), and on the absence of any ophthalmoscopic appearances in the fundus which could account for the defect, said that he had no hesitation in attributing the loss, which amounted to  $7/8$  of the normal, to the recent injury.

The referee of the Company then saw the patient, and after a thorough examination, found the loss of acuity even greater, and recognised the cause to be a grave pathological process of the optic nerve, which, he stated, was going on to its worst termination, namely, atrophy. At the same time, he expressed his opinion that this process could not be occasioned by the traumatism, but must have pre-existed, the cause being still to seek.

This conclusion was come to at a consultation of the oculists representing the Company and the insured, but the latter surgeon held that the accident, although it had not caused the grave disease of the optic nerve, yet might have determined the onset and consequence.

Such was the history

I now give a *résumé* of the essential parts of my examination :

Lids and adnexa of both eyes show nothing abnormal.

Sensation of conjunctiva normal ; movements of the eyes normal in every direction.

Confining our attention to the right eye, which had been injured and had lost some of its visual power, we found the cornea normally transparent in all its extent ; this transparency was confirmed by a complete examination, capable of showing any delicate opacity which might have escaped the naked eye. The same examination allowed us to declare the aqueous humour and the iris tissues normal.

The intra-ocular tension of both eyes was normal ; if there was any difference, the right was slightly less than the left.

The pupil was normal as regards both form and size in both eyes, and the reaction, direct and consensual, was retained.

*Ophthalmoscopic Examination.*—Right eye (inverted image). The optic disc was very pale and surrounded in its inner side by a more or less marked halo, which in its largest extent was not more than  $1\frac{1}{2}$  times the diameter of the disc : the colour of the halo was slaty, and the margin irregular, with salient angles and points. The retinal vessels were small and became invisible in the latter part of their course owing to their tenuity.

By using Trantas' method of exploring the anterior regions of the fundus\* it was possible to bring into view, in the region of the ora serrata, changes of

\* For description of this method see THE OPHTHALMOSCOPE, 1906, p. 446, and 1907, p. 722.



old standing, which tended to spread thence towards the centre. They consisted in masses of pigment, irregular both in form and thickness, and in extensive atrophy of this pigment or of the choroid, with streaks and irregular patches of scattered and altered pigment.

Left eye. The vessels in this eye also were very small. The disc was rather pale, or at least not much coloured, and a little indistinct. Arteries pale, and rather irregular in calibre. On the inner half of the disc margin a fine crescent of very dark pigment. Beyond this, an area of choroidal atrophy, limited on its other border by very fine lines of pigment, running in the direction of the meridians of the eye.

Refraction: R.E. emmetropia; L.E. emmetropia. Visual Acuity: R.E., 1/10; L.E., 10/10.

Tests made with the stereoscope showed that the right eye did not see, or, at least, had vision so imperfect that it took no part in stereoscopic vision.

For the examination of the colour-sense Antonelli's chromatoscope was used, which allows a careful and exact determination. With the right eye, the patient saw red as red only with an aperture of 7mm.; violet was unrecognised; blue was recognised with an aperture of 10mm.; and green at the same opening. There was contraction of the visual field for white and colour; the contraction increased according to the physiological diminution of the fields for the various colours; the field for green was reduced to infinitesimal size.

The history of the patient, both personal and family, was as follows.—His mother died at the age of about 58 years, after a short illness, from some disease of the stomach. His father is still alive, and although about 84 years of age, still works hard on a vineyard. His mother had six pregnancies, which all went to term. Two children died in infancy, one at a year and one at a year and a half, from some disease not now ascertainable. Of the others the eldest died from violence.

The patient has no recollection of ever suffering from any illness; he remembers hearing from his mother that he had an attack of fever lasting three days in infancy; apparently, he had convulsions. He has four children, of whom one died at the age of one and a half from some disease which he cannot specify. He stammers. He has no arteriosclerosis in any artery which can be readily examined. His appearance is one of robust health. No member of his family has suffered from defective sight.

We find ourselves, then, confronted by the following facts: the man shot, and proved himself a marksman, up to September 20th. In the following February a splash of lime entered his eye, giving rise to a lesion of so little importance that all inflammatory reaction speedily disappeared, and left no trace whatever of any organic disturbance. Five days after the accident the patient complained of diminution of visual acuity.

However trivial the reaction after entrance of lime into the eye, there is almost always a marked failure of vision, due to some alteration, however slight, of the corneal epithelium.

But the point to be noted in the present case is, that the man continued to complain of the defect even after all trace of the inflammation had disappeared, when a skilful oculist examined him more than two months after the accident. This surgeon made an ophthalmoscopic examination, and found the cause of the loss of visual acuity to be atrophy of the optic nerve—an atrophy which from its nature could be pronounced secondary to a preceding neuritis.

Inasmuch as the time elapsed—little more than two months—was insufficient to allow for the development of a process of neuritis, and its progress to atrophy, this alone was a sufficient reason (if such reason were necessary) for



denying the relation of cause and effect between the accident and the observed organic lesion. I say "if such reason were necessary," because it could be easily demonstrated from the size and kind of the lesion and from its situation, that such relation could not possibly exist. It must, therefore, be held that the disease of the optic nerve was in progress when the lime entered the eye.

In face of the unfortunate increase of malingering under the Italian compensation law, there was a possibility that the case was not *bona fide*, in which event all clinical reasoning would be futile. It might be thought that the man, foreseeing the loss of sight, had introduced, with due caution, the particle of lime into his eye, with a view to making a claim for indemnity on the ground of this injury.

There is no need for us to have recourse to this hypothesis. We are medical experts, and not police, and, until the contrary is proved, we must maintain that if the patient misled us, it was from ignorance and not from the desire to deceive. In such cases our duty is ended when we have told the magistrate whether the lesion is due to the supposed cause, or to some other; perhaps to make the answer complete, we should state to what cause it is due.

In the present case, I entertained no doubt as to the man's good faith. He had shot well up to within five months of the entrance of the foreign body into his right eye. During these five months he had no occasion to use the eye for aiming or to test the vision of that eye. The occurrence of the accident led him to test the eye; to find whether he had suffered any loss: the diminution, which had existed unsuspected before, was then first noticed.

It is by no means a new thing for a patient to lose the sight of one eye without discovering it, so long as the other is normal. This ignorance of the loss may last a long time. Without referring to the experiences of others, it will suffice here to recall the case which I published jointly with my esteemed friend, Despagne, in 1884, when we were assistants in Galezowski's clinic.

In this *memoir*, we relate the history of a lady who, while combing her hair one morning in front of a looking glass, noticed that she did not see the hair which fell in front of the right eye. When her attention was thus called to it, she noticed, further, a small degree of proptosis. Ophthalmoscopic examination revealed complete atrophy of the optic nerve, which must have certainly existed some considerable time. Removal of the eye, allowed the recognition of the presence of an orbital tumour, which was excised by Prof. Richet in his clinic at the Hôtel-Dieu. Histologically, the tumour proved to be a fibroma, which from its nature and volume, had probably existed for twenty years. The growth originated from the sheath of the optic nerve.

It is therefore very possible that the disease of the optic nerve began in the injured man in the time (four months and a half) which intervened between the time of his firing and the time of the accident, and that he having no occasion to aim, and having also sufficient sight to carry on a trade which does not demand great acuity of vision, never noticed the deterioration which was progressing to loss of the affected eye. The tests which the injury led him to make, brought the failure to his notice, and it was more than natural that he should attribute the effect to the known cause. His assumption was even more natural, or rather it was logically necessary, when medical men gave the unfortunate certificate as to the connection of cause and effect. The giving of such certificates does great harm both to the moral sense of the assured and to the prestige of the medical profession, and their existence shows that certificates demanded by the law are often made out by persons absolutely incompetent to do so. Is it certain, then, that the disease which led to such fatal results, began during the aforesaid interval? This is by no means necessary. The disease

might have begun earlier, and yet the man might have been able to gain those successes in shooting which are proved by the evidence produced.

It is not the ophthalmoscopic appearance only which leads me to say that the man was not lying on the chance of dishonest profit. Every expert knows how fallacious a judgment is that which relies entirely on the objective examination of the optic disc. A colour of the disc which can only be described as snow-white, together with blurring of the margins as the result of neuritis, and a diminution of the vessels until it can hardly be realised that they exist as pervious channels, may be associated in a child with vision sufficient to allow him to follow a course of difficult study. We recognise that it is an error to pronounce judgment on the objective examination only, and to defer until after the functional examination, which may show our former deductions to be wrong. In this connection I would mention a discussion which took place at the Royal Academy of Medicine at Rome, when the illustrious master, Luciani, took part. The subject was the function of the brain and the localisation of its various centres by deduction from pathological examination. Luciani threw doubt on these deductions, and in proof of the fact that a part of the brain may be altered or dead, while the allotted function may still be carried on, said, "Consider what happens in the eye. The oculist talks of atrophy of the optic nerve, and the patient who is suffering from it, sees." My answer to the distinguished physiologist was that the oculist, who from the appearance of the disc alone gives a diagnosis, ought to speak, not of atrophy but of the appearance of atrophy, since the diagnosis of atrophy can be made only after a careful functional, as well as an ophthalmoscopic, examination.

And if this is true of post-neuritic atrophy, it is yet more true of the so-called simple variety. It was therefore not superfluous caution which led me at first to doubt whether the loss of function in the patient under discussion was as great as appeared at the first examination. But the results of my own examinations, repeated in various ways, were so exactly concordant with each other and with those of other examiners, that I came to the conclusion that the man was not lying and the loss was as great as he stated.

(To be concluded.)

HAROLD GRIMSDALE.

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## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

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### I.—THE OPSONIC INDEX IN OPHTHALMOLOGY.

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Stock, W.—On the use of Wright's opsonin-technique in ophthalmology, especially in tuberculous diseases of the eye. (*Ueber die Anwendung der Wrightschen Opsonintechnik in der Augenheilkunde, speziell bei tuberkulösen Erkrankungen des Auges.*) *Klin. Monatsbl. f. Augenheilkunde*, November, 1909.

Stock, of Freiburg, set himself the following two questions: (1) Is the determination of the opsonic index necessary, or, at least, advantageous in the tuberculin treatment of eye diseases? (2) Can the tuberculous nature of an eye affection be proved by observation of the opsonic index, before and after

artificial irritation of the diseased eye? Put shortly, the former question is answered in the negative, the latter in the affirmative. Small infrequent doses of tuberculin brought about a rise in the opsonic index of most cases. But this result was by no means identical with improvement in the patient's condition. To obtain the latter most desirable effect, higher doses were invariably required. As a guide to the proper effective dose, the opsonic index proved useless; in this respect Stock had to rely on clinical observation, choosing the highest dose which the patient stands without any reaction. In testing the diagnostic value of the opsonic index, Stock arrived at interesting conclusions in harmony with the views of Wright. He found that instillation of dionine into an eye was followed by a decided change in the opsonic index if the eye was the seat of a tuberculous lesion. C. MARKUS.

## II.—THE SERUM DIAGNOSIS OF SYPHILIS.

- (1) Cohen, Curt.—The sero-diagnosis of syphilis in ophthalmology. (*Die Serodiagnose der Syphilis in der Ophthalmologie.*) *Berliner klinische Wochenschrift*, 4 Mai, 1908.
- (2) Schumacher, Gerhard.—The sero-diagnosis of syphilis in ophthalmology, with remarks on the relation between syphilis and tuberculosis in eye affections. (*Die Serodiagnose der Syphilis in der Augenheilkunde nebst Bemerkungen über die Beziehungen der Tuberkulose zur Syphilis bei Augenleiden.*) *Deutsche medizinische Wochenschrift*, 4 November, 1909.
- (3) Fleming, Alexander.—The serum diagnosis of syphilis. *British Medical Journal*, October 2nd, 1909.
- (4) Cohen, Martin.—The value of the sero-diagnosis of syphilis in ophthalmology: a preliminary report. *Archives of Ophthalmology*, March, 1910.
- (5) Silbersiepe, Fritz.—A contribution to the study of syphilitic parenchymatous keratitis with the aid of Wassermann's reaction. *Inaug. Dissert. Berlin*, 1908, ref. in *Archives of Ophthalmology*, March, 1910, page 174.
- (6) McDonagh, J. E. R.—Wassermann's reaction from a practical point of view. *Lancet*, April 2nd, 1910.

(1) There is now a consensus of opinion that while positive Wassermann proves, negative does not disprove, syphilitic infection. Cohen reports on the results which he derived from submitting doubtful cases in Uhthoff's clinic, then in Breslau, to this test. Altogether, 64 patients were examined. In 23 cases the result was positive, in only 8 of which the clinical examination alone would have been conclusive as to the syphilitic nature of the affection (6 times iritis, once neuro-retinitis, with "dust" in the vitreous, once paresis of the external rectus and locomotor ataxy). In 41 cases where the reaction was negative, the clinical examination was sufficient evidence of syphilis in 5 cases. Although, as mentioned before, negative Wassermann does not exclude syphilis, Cohen thinks that it must cause some doubt about its presence, and that in these cases tuberculin often gives satisfactory results;

but we also must remember that a positive result of both Wassermann and old tuberculin are by no means exceptional occurrences. However this may be, the presence of Wassermann's reaction is a conclusive proof of syphilis.

R. GRUBER.

(2) **Schumacher's** cases are taken from the eye clinic at Kiel. Out of 74 cases submitted to Wassermann's test, 16 were doubtlessly syphilitic; in 5 of these (1 syphilitic iritis, 2 lues cerebri, and 2 locomotor ataxy) there was no reaction, but then most of these cases had been treated, and it is not uncommon to see a previously positive Wassermann reversed by treatment. In 28 cases of interstitial keratitis (20 of which fresh) the reaction was positive in 17 fresh and 6 old cases. Out of 15 cases of peripheral infantile chorio-retinitis 10 were negative, although other signs of lues and the history did not allow of the slightest doubt as to the causation. This seems to disprove the theory of Best, namely, that his negative result of Wassermann's test suffices to establish a non-specific form of chorio-retinitis, somewhat allied to retinitis pigmentosa.

The conclusion to which Schumacher arrives is that a negative result of Wassermann's reaction excludes syphilis in only about 50 per cent. of the class of cases with which the ophthalmic surgeon has generally to deal. The following table reproduces the more important points of Schumacher's results arranged according to the clinical diagnosis:

	Certainly syphilitic		Doubtful		Certainly non-syphilitic		Total	
	+	-	+	-	+	-	+	-
Iritis ... ..	10	2	13	21	0	20	23	43
Choroiditis and retinitis ... ..	1	1	1	4	0	3	2	8
Scleritis ... ..	1	0	1	1	0	7	2	8
Interstitial keratitis ... ..	0	0	0	2	0	2	0	4
Keratitis parenchymatosa et lues hereditaria	18	5	5	0	0	0	23	5
Superficial keratitis ... ..	0	0	0	1	0	9	0	10
Neuritis ... ..	0	0	1	6	0	1	1	9
Optic atrophy ... ..	3	2	3	11	0	0	6	13
Choked disc ... ..	0	0	0	6	0	0	0	6
Ophthalmoplegia externa ... ..	1	3	4	6	0	0	5	0
Ophthalmoplegia interna ... ..	0	1	2	2	0	0	2	3
Argyll Robertson pupil ... ..	2	0	3	1	0	0	5	1
Hemianopsia ... ..	0	0	1	1	0	0	1	1
Sympathetic ophthalmia ... ..	0	0	0	0	0	1	0	1
Total ... ..	40	18	34	73	0	50	74	141

A positive result of Wassermann's test does not, of course, prove that the actual cause of the eye trouble is syphilis. This is the more important as the



tuberculin reaction may also be positive. This happens sometimes in interstitial keratitis, especially where one eye is alone affected. The clinical symptoms and the result of antisyphilitic treatment pointed in these cases (5 in all) towards a syphilitic process. The connection of syphilis and tuberculosis has not yet been clearly explained, but the author feels inclined to think that both infections may exist, and that an eye which has been attacked by hereditary syphilis is particularly liable to a secondary tuberculous infection. In every case where the clinical aspect points to tuberculosis ('lumpy' precipitates, nodular iritis, etc.) Schumacher advises the combination of anti-syphilitic treatment with tuberculin injections.

R. GRUBER.

(3) This short article, in which **Fleming** describes a method "which differs very much from the Wassermann's original adaptation of the Bordet-Gengou method," should be studied in the original.

ERNEST THOMSON.

(4) That the Wassermann reaction is likely to prove as useful in ophthalmology as in other branches of medicine and surgery is shown by the researches of A. Leber (1907), C. Cohen (1908), and G. Schumacher (1909).

**Martin Cohen**, of New York, now makes a valuable contribution to the subject dealing with the examination of 130 cases, a number which includes most of the organic diseases of the eye. The material was mostly obtained from the New York Ophthalmic and Aural Institute. The *technique* followed was that introduced by Noguchi, who himself supervised the work at the Rockefeller Institute for Medical Research.

Of the total number of cases (130), 45 per cent. gave a positive, and 55 per cent. a negative Noguchi reaction. In 29 of the cases, where there was clinical evidence or trustworthy history of syphilis, 14 yielded a positive and 15 a negative reaction. Of 33 cases where antisyphilitic treatment had recently been carried out, 14 gave a positive and 18 a negative reaction. In the combined categories of doubtful and obscure ætiology, there were 101 cases, of which 45 per cent. yielded a positive and 55 per cent. a negative reaction. For purposes of comparison it may be stated that C. Cohen, employing the Wassermann reaction, found that 36 per cent. of his 64 cases were positive, while Schumacher, employing the Bauer modification of the Wassermann reaction, found that 34 per cent. of his 215 cases gave a positive reaction.

But it is clear that no general conclusions as to the value of the reaction can be drawn from cases so heterogeneous as those grouped above. Before this can be done, the various diseases experimented on must be taken up one by one:

1. **Interstitial Keratitis.**—Of the 38 cases of interstitial keratitis, a positive result was obtained in 24, or 63 per cent. It is interesting to note that in three instances the reaction was positive in the mothers as well as in the children.

2. **Iritis.**—Of the 16 cases of acute iritis studied, a positive reaction was given by 50 per cent. Leber, C. Cohen, and Schumacher obtained a positive result in about 30 per cent. of their cases of iritis.

3. **Optic Neuritis and Neuro-Retinitis.**—Sixteen cases were tested, and nine, or 56 per cent., yielded a positive result.

4. **Optic Atrophy.**—Of the ten case studied, two gave a positive, and eight a negative reaction.

5. **Chorio-Retinitis.**—Reaction was positive thrice in the six cases tested,

6. **Detachment of the Retina.**—A primary detachment of unknown ætiology yielded a negative reaction. The other patient, nine years of age, exhibited detachment secondary to exudative choroiditis. There had been a couple of miscarriages, and both parents, as well as the child, gave a positive Noguchi reaction.

7. **Ophthalmoplegia interna.**—One positive and one negative reaction.
8. **Oculo-motor paralysis of one eye.**—Positive reaction in both cases studied.
9. **Retinitis pigmentosa.**—Of the eight cases studied five gave a positive reaction, an interesting result in view of the uncertain aetiology of this disease.
10. **Acromegaly.**—In two cases with characteristic signs, one yielded a positive reaction. This patient suffered from bilateral hemianopsia.
11. **Chancre of the upper eyelid.**—A positive reaction was obtained in a man, 44 years of age, who presented a punched-out, painless ulcer situated on the skin surface of the right upper eyelid near the margin of the latter.

Cohen concludes from his observations that we are scarcely as yet justified in drawing final conclusions as to the diagnostic and therapeutic value of the Noguchi reaction in ophthalmology. It is probable that in it we possess a valuable presumptive aid in the diagnosis and treatment of diseases of the eye. The large proportions of positive reactions in cases of retinitis pigmentosa may throw some light upon the aetiology of that obscure affection. The frequent occurrence of a positive reaction in both mother and child when the last-named is affected with interstitial keratitis goes to confirm one's preconception that the disease in question is often due to hereditary syphilis. In brain cases with choked discs in which the indications for operation are doubtful, and syphilis is suspected, the presence or absence of the Noguchi reaction places in our hands a valuable confirmatory aid, which is speedier and probably more satisfactory than the therapeutic test.

Cohen's suggestive communication concludes with a tabulated list of all the cases tested by the Noguchi reaction. SYDNEY STEPHENSON.

(5) **Silbersiepe** investigated one hundred cases of interstitial keratitis with special reference to their aetiology, using Wassermann's reaction. Syphilis was present in all the cases. Wassermann's reaction was positive in 85; in only nine were there signs of tuberculosis in addition to the syphilis. In interstitial keratitis from hereditary syphilis there were usually peripheral changes in the choroid, while in acquired syphilis the complications affected the iris, the ciliary body, and the sclera. Hutchinson's teeth and diseases of the bones formed the principal bodily symptoms of hereditary syphilis.

KNAPP.

(6) The test published by Wassermann in 1906 still holds the field as the most trustworthy of all serum tests for the diagnosis of syphilis. The reaction, empirical though it be, nevertheless represents one of the greatest advances of modern medicine, the name of Wassermann being, as **McDonagh**, of London, remarks, to syphilis what that of Widal is to enteric fever. At the same time, although much has been said about the theory of the reaction, its practical bearing has received too little consideration.

In the primary stage of syphilis, the use of the reaction is limited, inasmuch as a positive result is not obtained in more than 40 per cent. of the cases. But the secretion from a primary sore seldom fails, when examined by means of the so-called "dark ground illumination," to show the *spirochæta pallida*. Indeed, the organism may be demonstrated by an even simpler method, namely, by the Chinese ink staining introduced by Burri. Films are made with a solution of Chinese ink, and objects under examination, as the *spirochæta pallida*, stand out white against the dark background. McDonagh concludes that in the primary stage of syphilis no dependence should be placed upon a negative Wassermann reaction, while if positive, the patient undoubtedly suffers from syphilis and should be treated accordingly.

In the secondary stage of syphilis, a positive Wassermann reaction can be obtained in 85 per cent. of all cases, irrespective of manifestations and whether

the patient is being treated or not. The figure is much higher when there is a rash and the patient has not yet been given mercury. Under such circumstances, a positive reaction is obtained in 97 per cent. of the cases. When no manifestations are present, the percentage stands at 80.

Taking all patients in the tertiary stage, 70 per cent. give a positive reaction. In patients who have no symptoms and yet yield a positive result we should suspect some visceral lesion—as internal gummata, arterio-sclerosis, aortic disease—or the nervous manifestations. Of cases of general paralysis of the insane 100 per cent. give a positive reaction, and of tabes about 60 per cent.

SYDNEY STEPHENSON.

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### III.—BACTERIOLOGY.

- (1) Schüssele, W.—A contribution to the knowledge of mild septicæmic inflammations of the human eye due to streptococcal infection. (Ein Beitrag zur Kenntnis der milden hämatogenen Entzündungen am menschlichen Auge durch Infektion mit Streptokokken.) *Klin. Monatsbl. f. Augenheilkunde*, Juli, 1909.
- (2) Oreste.—Corneal infections in general and ulceration caused by the diplobacillus of Petit in particular. (Les infections cornéennes en général et l'ulcère à diplobacille de Petit en particulier.) *Ann. d'Oculistique*. October, 1909.
- (3) Dor, Louis.—Bilateral panophthalmitis consecutive to a suppurative peri-cholecystitis. *La Clinique Ophthalmologique*, 10 novembre, 1909.
- (4) Oreste.—Metastatic choroiditis caused by a bacillus hitherto undescribed. (Choroidite métastatique causée par un bacille non encore décrit.) *Ann. d'Oculistique*, novembre, 1909.
- (5) Fisher, Carl.—The differentiation of the diphtheria bacillus from organisms morphologically similar. *Archives of Ophthalmology*, November, 1909, and *Trans. American Ophthalmological Society*, Vol. XII, Part I, 1909.
- (6) Kuffler, O.—A clinical and bacteriological study of diseases of the conjunctiva and lacrymal sac, including cases of panophthalmitis. (Klinisch bakteriologische Studie über Bindehaut und Tränensackkrankungen nebst einigen Fällen von Panophthalmie.) *Zeitschrift für Augenheilkunde*, November, 1909.
- (7) McKee, S. Hanford.—A retrospect of some ophthalmic bacteriology. *Montreal Medical Journal*, January, 1910.
- (8) Turner, A. Logan, and Lewis, C. J.—A further study of the bacteriology of suppuration in the accessory sinuses of the nose. *Edinburgh Medical Journal*, April, 1910.

(1) Schüssele describes a case of great clinical interest.—An army officer, aged 40, suffered in 1903 from tonsillitis, which was followed by articular rheumatism of four months' duration. In 1905 heart trouble set in, which became much aggravated in March, 1908, and associated with fever and very painful muscular rheumatism. The symptoms soon pointed to septic endo-



carditis. Suddenly occurring and disappearing signs of lung consolidation in patches were prominent features of the clinical picture. *Streptococcus viridans* seu *mitior* was cultivated from the blood. Treatment with salicylates, polyvalent streptococcal serum, collargol, and streptococcal vaccines, prepared from the patient's blood, was resorted to, but all means proved unable to save the patient's life. Death occurred in December, 1908. The first ocular complication occurred about the middle of July: scleritis and iritis of short duration in the right eye. A second slight attack of iritis in the same eye was noticed in the middle of August, and it was soon followed by a small subconjunctival hæmorrhage. Near the end of September streaky retinal hæmorrhages and white spots between disc and macula appeared in the left eye. The margins of the disc were blurred, and white lines accompanied the larger retinal vessels. In October severe plastic iritis of the right eye set in, in the course of which a big hæmorrhage took place in the anterior chamber. An attack of irido-cyclitis of less severity occurred in the eye at the beginning of November. The inflammation of both eyes subsided spontaneously. About the middle of November a small subconjunctival hæmorrhage was noticed in the left eye. A few weeks before the death of the patient, three fresh roundish hæmorrhages appeared in the fundus of the left eye. The author considers the eye-changes are due to real bacterial embolism, not to the action of the toxins. This view could, unfortunately, not be verified by the microscopical examination of the eyes, as no autopsy was permitted. C. MARKUS.

(2) **Oreste**, working in Morax's clinic at the Larboisière, made a careful bacteriological examination of a series of corneal ulcers, with a view to determining, as far as possible, the nature of any cases which did not belong to the recognised types. He failed to discover any new infective agent, but found that four of the cases were due to infection with the diplobacillus liquefaciens of Petit. This high proportion of cases due to a form of infection regarded as rare, led the author to study the form of corneal ulcer caused by it, basing his conclusions on the histories of his own four cases and of four others from the practice of Morax, and to give the following description of the condition.—The ulcers are always monocular, and generally situated in the centre of the cornea. They are usually round, with greyish floor and irregular edges, tend to spread superficially, and are accompanied by more or less hypopyon, by iritis without extensive synechiæ, and by chemosis. There is not much photophobia or pain. Fever and general symptoms are absent; but there is almost always disease of the lacrymal passages. The causes which favour the corneal infection are lacrymation and traumatism. The duration of the disease in cases treated early may be only 10 or 11 days, but in severe cases it may be as long as 4 to 6 weeks. The absence of all inflammatory symptoms as regards the conjunctiva shows that the infection of the cornea is primary and distinguishes the condition from corneal ulceration secondary to diplobacillary conjunctivitis, which is usually marginal and not accompanied by hypopyon or iritis.

The question as to whether the diplobacilli of Petit and of Morax-Axenfeld are variants of the same organism is discussed, and the author argues in favour of the view that they are distinct. The former grows on media without any addition of serum and liquifies gelatine, while Oreste had found experimentally that it does not cause inflammation in a healthy eye.

The author considers that the absence of pain and of severe photophobia and the dilatation of the iris under the atropine are points which clinically distinguish serpiginous ulcers due to Petit's diplobacillus from those due to pneumococci and are of value in establishing the prognosis, which is much more favourable in the former condition than in the latter.



There is nothing special about the treatment, which should consist of atropine, cauterisation with 20 per cent. sulphate of zinc solution, or the galvano-cautery, iodoform or yellow oxide ointment, bandaging, and treatment of the associated lacrymal disease.

R. J. COULTER.

(3) The case reported by **Dor**, of Lyons, seems to be unique or extremely unusual. A woman of 61 years, who had been attended by a medical man for a fortnight on account of febrile jaundice and hepatic colic, was seized with bilateral blindness, which, after 36 hours, when Dor first saw the patient, had become absolute. By this time the anterior chambers contained pus and the conjunctivæ were œdematous. Local treatment and quinine hypodermically were of no avail. A surgeon was called in and advised that the abdomen should be opened. The gall bladder was surrounded by a fœtid abscess and contained a score of gall-stones. The patient died in 48 hours. A bacillus was found in the pus, but it did not grow on bouillon or agar. It was concluded that the organism was anærobic, and not, as is usually the case, streptococcus or pneumococcus.

ERNEST THOMSON.

(4) **Oreste**, of Paris, made a bacteriological examination of an eye removed by Morax from a man aged 50 for metastatic ophthalmia. None of the usual organisms were found, but a previously undescribed bacillus was isolated from the vitreous. This organism grew on agar or ascites-agar and Sabouraud's medium, forming in 24 hours isolated opaque round colonies, the size of a bean, raised in a dome-shape with clean-cut edges, a translucent surface and a whitish-yellow colour. The colonies resembled large drops of wax, and had a thready, mucous consistence. Anærobic cultures on Veillon's glucose-agar showed round whitish colonies, the size of a pin-head, with formation of an opaque fluid and abundant development of gas but no bad odour. Microscopic examination of all these cultures showed the same organism, a small immobile bacillus with rounded ends and a slight constriction in its centre which stained well by Ziehl's method but not at all by Gram. Subcultures gave the following results: (a) bouillon became turbid with formation of flakes and a film formed on the surface which was easily broken at the end of 24 hours leaving a white ring attached to the tube: (b) on glycerinated potato small round colonies formed which were semi-transparent at first but later became opaque with formation of foam; (c) stab cultures in gelatine gave a nail-shaped growth with no liquefaction; (d) streak cultures on gelatine gave nummular brownish colonies; (e) turnesol milk became coagulated with acid reaction; (f) glucose and saccharose were not altered. Inoculation of the vitreous of a rabbit's eye with a few drops of a bouillon culture caused panophthalmitis in 24 hours, while injection of 0.5 c.cm. of the same culture under the skin of the abdomen caused a hard swelling, which in the course of 10 days reached the size of a nut and then became gradually absorbed. The bacillus described above differed from the bacillus coli communis in its immobility, its inactivity to sugars, and its morphological characters.

Microscopical examination of the enucleated eye showed the lesions usually associated with iridochoroido-retinitis of metastatic origin.

R. J. COULTER.

(5) **Fisher**, of Boston, has undertaken to ascertain the value of the dextrin-saccharose fermentation test in the diagnosis of diphtheria. All but four of the specimens used were unselected, and obtained from cases of membranous, purulent, and chronic conjunctivitis, keratitis, Tenonitis, trachoma, and various anginas. Fisher concludes that:—(1) The diphtheria bacillus cannot be identified accurately by its morphology and cultural characters alone. (2) True diphtheria bacilli always ferment dextrin within 48 hours and never saccharose. Out of 13 unselected races, however, which fermented dextrin, five were totally avirulent. (3) The fermentation test, in the majority of cases,

is conclusive, but its value is lessened by the fact that the bacilli must be in absolutely pure culture. (4) Animal inoculation is the only reliable test, and an animal immunised with diphtheria antitoxin must also be inoculated to exclude the virulent diphtheroids. (5) In practice, on account of the necessity of early treatment, the diagnosis of diphtheria should be based chiefly upon the clinical appearances and symptoms. The microscopic examination is only to be relied upon when negative. Animal inoculation should be carried out in every case where diphtheria is diagnosed, so as to avoid unnecessary quarantine.

ROSA FORD.

(6) **Kuffler** (Giessen) has examined 727 cases of conjunctivitis, all by smear preparations, and many by careful culture methods and by injection into animals. The organisms found were as follows: Koch-Weeks' bacillus, not once; diplobacilli, 42 per cent.; diplobacilli and pneumococci, 4 per cent.; pneumococci, 8 per cent.; xerosis bacillus, 6 per cent.; staphylococci, 2 per cent.; gonococci, 1 per cent.; diphtheria bacillus, 1 per cent.; no organism detected, 36 per cent. The Koch-Weeks' bacillus is very rare in South Germany, but the author thinks that some part of the 36 per cent. of all cases in which no organism was found may have been due to some similar infection which we cannot at present detect. In countries where the Koch-Weeks' organism is common, the proportion of sterile cases is much smaller.

Directions are given for the discovery of the Klebs-Löffler bacillus, a matter of great difficulty in mixed infections. Forty cases of dacryocystitis were examined, with the following results:—Pneumococci, 17 cases; pneumococci and staphylococci, 3 cases; pneumococci and influenza bacillus, 10 cases; pneumococci and xerosis bacillus, 1 case; streptococci, 5 cases; Koch-Weeks' bacillus, 1 case; bacillus subtilis, 1 case; diplobacilli, 1 case; Freidländer's bacillus, 1 case. The streptococci were found in cases of acute pericystitic-lachrymal phlegmon.

Bacillus subtilis was present in three cases of panophthalmitis, twice alone, and once associated with pneumococci. In all three cases the bacillus subtilis was of a very malignant type.

The author has trodden the path worn smooth by Saemisch, Axenfeld, and zur Nedden. His paper is an example of painstaking research, but adds nothing new to the sum total of human knowledge. T. HARRISON BUTLER.

(7) **McKee's** communication was published in *THE OPHTHALMOSCOPE* of December, 1909.

(8) This elaborate communication by **Turner**, of Edinburgh, and **Lewis**, of Birmingham, represents a continuation of work upon the bacteriology of nasal sinus suppuration already published in the *Edinburgh Medical Journal*, of November, 1905. The present investigation deals with a total of seventy patients affected with suppurative disease of the various accessory sinuses—antrum, and the frontal and the ethmoidal sinuses. The investigation appears to have been of a most careful and painstaking nature, and both aerobic and anaerobic cultures were made in every instance. The pathogenicity of many of the cultures was tested by inoculation into animals; such as the guinea-pig, mouse, and rabbit.

The authors formulate their conclusions as follows:

1. That sinus suppuration is not caused by any one particular micro-organism.
2. That while bacilli may cause suppuration, we think that pyogenic cocci of various kinds are more often responsible.
3. That four main types of cocci are commonly met with in sinus suppuration, *viz.*, pneumococci, streptococci, staphylococci, and diplococci of the type of *micrococcus catarrhalis*.

4. That the following groups of bacilli are frequently present in sinus suppuration—(a) *Bac. coli* and its allies; (b) putrefactive bacteria, such as *proteus* and its allies; (c) dental organisms such as *Bac. gangrene pulpæ* and *Bac. necrodentalis*; (d) an obligate anærobic group, of which prominent members are *Bac. perfringens* and *Bac. ramosus*; (e) a diphtheroid group; and (f) *Bac. influenzae*.

5. That the pus in a considerable number of chronic uncomplicated antral cases contains organisms of dental and buccal habitat, and that in some of these cases it is possible to isolate identical organisms from the pus and from diseased teeth extracted at the time of the operation upon the sinus.

6. That clinical and bacteriological investigations agree in showing that nasal infection of the antrum is more common than dental infection and that probably about one-third of the cases of antral suppuration are due to dental infection.

7. That while in bilateral sinus suppuration the pus from the two antra may contain the same bacteria, this is not invariably the case; we have isolated from one antrum a virulent diphtheria bacillus, which was absent from the other.

8. That in recent cases of sinus suppuration the streptococci were found virulent in 60 per cent., and in the case of chronic suppuration only 30 per cent. have been proved virulent.

9. That fœtor is the result of the growth of certain organisms, sometimes of those responsible for the suppuration and sometimes of those concerned in the decomposition of the products of inflammation. That both ærobic and anærobic organisms are capable of causing fœtor.

10. That fœtor may be present in antral suppuration of very recent origin as well as in chronic cases, and that antral cases of nasal affection as well as those of dental infection may be fœtid.

11. That recent cases of maxillary sinus suppuration (duration in this series two days to three weeks) readily cure by lavage.

12. That when lavage is practised whether in recent or chronic cases, it should be carried out through the nasal cavity: the alveolar opening should be abandoned.

13. That a certain proportion of chronic cases of antral suppuration are cured by lavage, but we cannot determine from the history of the case, the duration of the discharge, or the path of infection which cases may be so treated successfully.

14. That some assistance in the choice of lavage may be obtained by a preliminary microscopical examination of the cell elements in the discharge and from a bacteriological investigation of the pus.

15. That the value of cytological examination, however, is minimised by the fact that the inflammatory process causes more advanced changes in one part of the lining mucous membrane of the antrum than in another.

16. That in those cases in which the discharge shows a relatively small number of lymphocytes, the prospect of cure by lavage is greater than when an excess of lymphocytes occurs (J. M. Darling).

17. That chronic cases in which no streptococcus pyogenes is found in the pus, more readily respond to lavage than those in which the same organism is present.

18. That when in chronic cases there is an excess of lymphocytes in association with the streptococcus pyogenes, treatment by lavage should not be attempted.

19. That neither inoculation experiments nor histological examination of the lining of the antrum explains the apparently greater resistance of the streptococcus pyogenes to treatment by lavage.



20. That failure in treatment by lavage may possibly be due to a deficiency in the patient's protective substances to deal with the streptococcus, and that a specially prepared streptococcus vaccine might be appropriately tried in these cases.

21. That we have no evidence that any special combination of organisms is responsible for the failure of treatment by lavage. SYDNEY STEPHENSON.

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#### IV.—PSEUDO-CATARACT.

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Doyme, R. W.—Myopic degeneration of the lens. *Trans. Ophthalmological Society U.K.*, Vol. XXX, Fasc. I, 1910, p. 90.

Doyme, of London and Oxford, recalls the fact that in the year 1888 he showed at the Ophthalmological Society of the United Kingdom an instance of peculiar degeneration of the lens in an elderly lady whose crystalline showed a difference in refraction amounting to 11 D. between centre and periphery. At the time, the case was generally regarded by members of the Society as one of lenticonus posterior. The condition has since then been described by R. Halben (Graefe's *Archiv f. Ophthalmologie*, Dezember, 1903), who acknowledged Doyme's priority of description and agreed with the accuracy of his original account.

The condition is not very uncommon, although it does not appear to be generally recognised. It is described by Doyme in the following words.—“On looking at the lens with oblique illumination there appears to be a dense opacity in its centre, so that at first sight it seems incredible that such is not the case. The opacity is, however, only apparent, and is due, I think, to reflection of rays of light from the sudden increase in the index of refraction towards the centre of the lens. There are frequently a few fine opacities, but that the gross appearance is not real can be seen by direct examination with the ophthalmoscope, when by moving the direction of the light rays by movement of the ophthalmoscopic mirror, the apparent opacity can be made to move like a shadow and each part in turn can be made to show its transparency. Again, on looking at the retinal vessels, a distortion, like that seen in conical cornea, is produced by movement of the head as the rays of light pass through the lower or higher refractive parts of the lens.” SYDNEY STEPHENSON.

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#### ALTERATIONS IN THE COLOUR FIELDS IN CASES OF BRAIN TUMOUR.

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- (1) Bordley and Cushing.—Alterations in the colour fields in cases of brain tumour. *Archives of Ophthalmology*, September, 1909.
- (2) Bramwell, Byrom.—A case of intracranial tumour with alterations in the colour fields. *Lancet*, March 5th, 1910.

(1) Bordley and Cushing have made extensive observations on the colour fields of patients suffering from brain tumour and have discovered that they are often inverted (dyschromatopsia) and contracted. Hitherto dyschro-



matopsia, especially when associated with concentric contraction of the visual fields, has been regarded as pathognomonic of hysteria, and the authors' cases show that errors in diagnosis have been numerous in consequence.

They find no definite relationship between the contraction of the field for form and that for colours. Some of the patients show a concentric contraction with colour reversal, such as Parinaud regarded as the "essential sign of hysteria," but the usual early return of the normal relations after the pressure symptoms have been relieved by operation suffices to controvert the view of their being hysterical in the usual application of the term.

In another group of cases the patients have shown not only concentric contraction of the form fields in association with colour reversal, but also peripheral limitations which are relatively greater in the form than in the colour fields, and in these cases red is apt to be less affected than blue—thus controverting the accepted view that a predilection for red is peculiar to hysterical subjects, and the more dogmatic statement "that it cannot be simulated and is caused by no other disorder."

In other cases the contractions for colour and form are uniform with the exception that the blue is almost invariably much more affected than the red field. The alteration in the blue is a more consistent and prominent feature than the preservation of the red, and blue blindness has been the sequel in several cases in which the colour change has been rapidly progressive. Where the constriction of the blue field has been closely observed, it has been found that it is apparently brought about by the formation of peripheral scotomata which gradually become fused.

The authors' cases show that the changes of most significance in cerebral tumours are to be looked for in the field for blue, and suggest that this fact may have a differential value, since tabes, multiple sclerosis, etc., show a primary change which is often limited to the red field.

Complete achromatopsia was noted in a number of instances. The changes in the colour fields often foretell the alterations which take place later in the fields for form, *e.g.*, hemiachromatopsia has occasionally been followed by complete homonymous hemianopsia involving the same side. Choked disc was present in most of the cases examined, but the writers emphasize the fact that the colour disturbances do not seem to depend upon the presence of neuroretinal œdema, because in four of their patients these symptoms preceded any appreciable ophthalmoscopic changes even when the early hyperæmia and congestion were regarded as a definite stage in the process of choked disc. On the other hand, they acknowledge that in six instances (out of fifty-six cases) the tumour symptom-complex was not accompanied by any alteration whatsoever in the visual fields.

The findings are summarised as follows:—

	Cases.
1. Interlacing of colour lines the predominant feature ...	25
2. Colour inversion the predominant feature ... ..	9
3. Hemiachromatopsia without corresponding change in the form field ... ..	4
4. Islands of blue blindness (scotomata) ... ..	3
5. Blue blindness ... ..	3
6. Complete green blindness ... ..	1
7. Complete achromatopsia ... ..	5
8. No colour change whatever ... ..	6
	—
	56

The striking features are :—

1. The fact that in many of the charts the fields for form are unchanged, while there is a very definite change in the fields for colour. Fifty out of the fifty-six cases show colour change; only eighteen show definite form changes.

2. In four of the cases in which the colours interlaced, tumours were found, though there was no choked disc.

3. In forty-one out of forty-two cases examined subsequently to operation, whether palliative or radical, the colour lines had become restored to their normal relative position.

The dyschromatopsia seems to depend in some fashion upon an increase of intracranial tension, the relief of which usually causes its early subsidence, and it is possible, therefore, that it may characterise organic lesions other than tumours.

J. JAMESON EVANS.

(2) In the case reported by **Byrom Bramwell**, of Edinburgh, the symptoms had been recurring attacks of painful tonic spasm in the left calf, usually followed by painless clonic spasms in the muscles of the left leg, sometimes attended with loss of consciousness; on one occasion on which there was no loss of consciousness, there was an aura which had a very definite course; finally, there was loss of power in the left leg. The family history was unimportant, and there was no history of syphilis.

In the course of examination, after admission to hospital, it transpired that there was no headache, no vomiting, no optic neuritis. Lumbar puncture showed marked leucocytosis and low pressure.

Bramwell relates how from the facts, from the patient's conduct, and from the good results of hypodermic injection of water, the house-physician concluded that the symptoms were largely functional. With this diagnosis Bramwell was not satisfied, and gave his opinion in favour of an organic lesion. Three weeks later, there was an influenza-like attack, a few days after which fulness of the retinal veins was noted. In about another fortnight double papillitis was found, while careful charting showed constriction of the fields for white and the fields for yellow and blue much smaller than for red. The author then remarks that until recently such constriction for white and colours with interlacing of the fields for yellow, blue, and red—the yellow and blue being much smaller than the red fields—was considered characteristic of functional and hysterical conditions, but now the work of Bordley and Cushing has made us aware that this condition of the colour-fields is present in a large proportion of cases of intracranial tumour. The patient at present in question was operated upon by removal of a flap of bone over the motor area. The pressure was found to be very greatly increased, the convolutions were flattened, but no tumour could be seen or felt. A cerebral hernia developed, the mental condition became deranged, the bandages were torn off in the night, and the wound became septic. The patient died, and at the autopsy an extensive gliomatous tumour was found to have extended to the wall of the lateral ventricle and across the under surface of the corpus callosum slightly to the right side, thus falsifying the apparently plausible early hypothesis of functional disorder and confirming the diagnosis of subcortical glioma, made later on in the case-history. The reviewer has only attempted to mention the principal facts of this interesting case, which will repay study in the original.

ERNEST THOMSON.

## VI.—THE ANGLE NOTATION OF CYLINDRICAL LENSES.

- (1) **Dunn, Percy.**—A new axial notation for cylindrical lenses. *Lancet*, February 19th, 1910.
- (2) **Ettles, William.**—The axial notation of cylindrical lenses. *Ibidem*, February 26th, 1910.
- (3) **Dunn, Percy.**—The standardisation of axial notations. *Ibidem*, March 5th, 1910.
- (4) **Walker, James P.**—*Ibidem*, March 5th, 1910.

(1) Under the heading "New Inventions" in the *Lancet*, **Dunn**, of London, brings up once again the old controversy as to the angle markings of the arcs of trial frames "Every method in vogue is a workable method ; but there is no uniformity, because there is no common standard ; and because these methods lack the basis of a standard which is known to the world, about which no confusion could arise, it is impossible to expect any universal agreement upon the subject." Dunn then suggests that the Mariner's Compass would give a standard notation so far as the general direction of the axis is concerned if we made use of the directions N.E. and N.W. Since in the compass the poles are marked zero and the equator  $90^{\circ}$  the formula, e.g., + 2 D. Cyl. axis  $15^{\circ}$  N.E. would be self-explanatory of an axis which would be  $15^{\circ}$  off vertical, down and out, up and in, for the right eye ; down and in, up and out, for the left eye. The trial frame, which constitutes the "invention," is obtainable from Messrs. E. B. Meyrowitz, of Bond Street, London.

(2) In reply to Dunn, **Ettles**, of London, declares for the Optical Society's notation. Dunn's chart has a duplicate set of numerals which necessitate the specification of the directions N.E., or N.W., whereas the optical Society's chart reads down and to the left for both eyes.

(3) **Dunn** then replies to Ettles that the point in his method is the universality of the compass notation, and suggests that the ophthalmic surgeon might go a step further and "box the compass" and prescribe accordingly. His prescription could not be misunderstood by any optician throughout the world.

(4) In the same issue **Walker**, of Basingstoke, finds fault with the compass method, because, in the absence of a compass or chart to refer to, the optician might not know whether — 2 D. Cyl. Ax.  $15^{\circ}$  N.E. referred to an axis  $15^{\circ}$  east of N or  $15^{\circ}$  north of E. Walker does not see the need for any fresh system, and hopes to see the International System given a fair trial. There is truth in his final remark : "those who decline to conform to a system authorised by a Congress of such influence as that which met at Naples will probably decline to conform to any system but their own special favourite one."

It may be well to remind readers of the Review dealing with this subject, which appeared in THE OPHTHALMOSCOPE for October, 1909, page 671, over the signature of the Editor.

ERNEST THOMSON.

## VII.—A PECULIAR CONDITION OF THE PUPIL IN III NERVE PARALYSIS.

**Franke, E.**—Congenital cyclic disease of the oculomotor nerve and hippus iridis. (Angeborene zyklische Okulomotoriuserkrankung und Hippus der Regenbogenhaut.) *Klin. Monatsbl. f. Augenheilkunde*, November, 1909.

**Franke**, reports two instances of a rare condition, first described by Axenfeld and Schürenberg. It consists in a very peculiar behaviour of the pupil in cases of congenital or early acquired paralysis of the extra-ocular muscles supplied by the third nerve. The pupil exhibits a continuous change between dilatation and contraction which differs from the oscillations of hippus; thus, in one of Franke's cases the pupil of the affected eye became slowly dilated to a diameter of 5 to 6 mm. and remained in this condition 5 to 20 seconds; then followed a comparatively rapid contraction to a diameter of  $1\frac{1}{2}$  to 2 mm., which persisted 10 to 20 seconds. The pupil did not respond to light nor to any other stimulus except the attempted innervation of the internal rectus muscle, which induced pupillary contraction. Spasm and relaxation of the ciliary muscle accompanied in one of Franke's patients the various phases of the pupil; this occurrence was also ascertained in some of eight cases reported in literature, and in none proved to be absent. Other concomitant movements have been observed by various authors, such as elevation and lowering of the upper lid, and slight contractions of the internal rectus. The persistence of the pupillary movements during sleep was seen in one case by Axenfeld and Schürenberg. All the patients were girls except one boy, this being also the only instance in which the condition was bilateral.

C. MARKUS.

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## VIII.—THE SYNDROME OF MIKULICZ.

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**Frenkel**.—Recent researches on the physiological syndrome of Mikulicz. (Nouvelles recherches sur le syndrome physiologique de Mikulicz.) *L'Ophthalmologie Provinciale*, novembre, 1909.

Although much has been recently written on Mikulicz's disease in a general way, **Frenkel**, of Toulouse, says that there is a poverty of literature with regard to its anatomico-pathological aspect, which may explain the want of unanimity of opinion on this point.

The author speaks of the condition as a syndrome, not a true disease, and refers to the definition published by him over a year ago (*Province Médicale*, novembre, 1908) in which he states that "it is legitimate to speak of the syndrome of Mikulicz in the cases where the affection concerns the whole system of salivary glands, parotid, submaxillary, sublingual, etc., *with* or *without* participation of the lacrymal glands, when it is bilateral, chronic, unaccompanied by pain, fever or functional troubles, when the gland swelling is hard and without inflammatory phenomena, when the general condition is good and the blood and lymphatic system show no marked alterations." One point, however, he now considers open to question, *i.e.*, as to whether the cases *without* swelling of the lacrymal glands should be included in the syndrome. For purposes of discussion he divides cases into two classes, namely:—"incomplete syndrome" (*syndrome fruste*), the cases without participation of the lacrymal glands, and "complete syndrome" (*syndrome complet*), those with swelling of these glands.

There is quite a series of cases where the swelling of the salivary glands has preceded, often by some years, that of the lacrymal glands, *i.e.*, the syndrome was at first incomplete, and only became complete much later; examples of these are the case of Tietze, where the syndrome only became complete after six years, four cases by Kümmel, the case of Tchize, that of Cutler, and also that of de Jong and Joseph—these two reported completion



of the syndrome nearly a year after the case had been first described by them as incomplete. Frenkel asks, "Does this incomplete syndrome always become complete"? and gives it as his opinion that "not only is it *not* always so, but that it is a rare occurrence." In support of this statement he refers again to the conclusions he drew in his work in 1908. In these he states (1) "with regard to the pathological syndrome of Mikulicz consisting of a symmetrical hypertrophy of the lacrymal and salivary glands, one must allow the existence of an analogous physiological syndrome "which affects only the salivary glands of the two sides, and (2) in the physiological syndrome" of Mikulicz are concerned the parotids, submaxillary, and sublingual glands which are increased in size, of hard consistency, painless, and present no functional trouble, etc., etc., (3), (4).

(5) Histological examination of a submaxillary gland excised from the living subject has shown perfect integrity of the acini and absolutely normal aspect of the cells, (6) frequency of this physiological syndrome can be provisionally estimated at 5 per cent. without it being yet possible to attach a definite value to these figures. In the Toulouse population this frequency appears to be greater among the subjects of Spanish origin. Men show hypertrophy of salivary glands more often than women, and it only appears to become striking in adults. Heredity can play a certain part in it." Among the recent publications is quoted that of M.M. Souques and Chéné.—"Atypical forms of the disease of Mikulicz" (*Bull. Soc. méd. des Hôpitaux*, fév., 1909) in which an "incomplete" (according to Frenkel) case is described, and looked upon by the authors as an atypical case. Frenkel, however, considers this case to be a typical one, since exactly similar ones can be found by dozens, but those of Teitze, Kümmel, Cutler, and de Jong and Joseph are atypical, because they are much rarer. Harmel's case (*Deutsche medizinische Wochenschrift*, 1909) is also referred to as an "incomplete" one, though described by its author as pathological.

During the past year Frenkel has observed 20 cases of the type looked upon by him as being physiological; he gives details of 8 cases, and their analysis shows the following:—

(1) Swelling of the salivary glands was present in all, in some of the cases more marked on one side than on the other.

(2) Cases I, II, III, and IV, showed "no" increase in the lacrymal glands, V, VI, VII, and VIII, showed increase in the palpebral part only, none showed increase of the orbital part of the gland.

(3) All except case VIII showed a more or less marked hereditary tendency.

(4) Seven of the cases varied in age from 39 to 67 years, and one was aged 21; six were males and two female.

Further questions which arise are.—What is the relation of the physiological syndrome to the complete syndrome of Mikulicz; can the complete syndrome be physiological or what is there pathological in the complete syndrome? Frankel thinks that a certain amount of hypertrophy of the palpebral lacrymal glands is often seen, either with or without association of hypertrophy of the salivary glands. When seen together it is permissible to speak of the physiological syndrome of Mikulicz, with or without participation of the palpebral lacrymal glands; there, however, the analogy stops, for the author says he has not yet observed any case of Mikulicz's disease with undoubted hypertrophy of the orbital lacrymal glands, except perhaps once; it must be, he thinks, a very rare occurrence.

When such a case is met with he would consider it a pathological condition of the orbital lacrymal glands which has become, so to speak, grafted on to a

case of physiological hypertrophy of the salivary glands; thus a complex artificial syndrome has been created, with a typical appearance, when really only one pathological lesion exists, namely, that of the orbital glands.

In conclusion, Frenkel considers that in the complete syndrome of Mikulicz the question of modifications of the salivary glands should be left out, and that the condition should rest only on the alterations of the orbital lacrymal glands.

It may be gathered from this interesting but somewhat vaguely expressed article that the author regards the majority of cases described as the disease of Mikulicz as being examples of a comparatively common and physiological condition, and that the disease of Mikulicz in reality is an extremely rare and atypical condition, more rare, indeed, than was even thought some ten years ago.

BERNARD CRIDLAND.

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### IX.—GUTTATE IRITIS.

**Doyme, R. W.—Guttate iritis.** *Trans. Ophthalmological Society U.K.*, Vol. XXX, Fasc. I, 1910, p. 91.

Under the name "guttate iritis," **Doyme**, of London and Oxford, describes a peculiar form of gouty inflammation of the iris, which he has seen more often in women than in men, and in private than in hospital work. The peculiarity of the cases is that one or several, small, warty-looking, almost transparent excrescences lie upon the pupillary edge of the iris without hampering in any way the movements of the pupil. Inflammatory symptoms arise only when the deposits adhere to the capsule of the crystalline lens, and the adhesions thereby brought about are soft and yield readily to the action of a mydriatic, although they are apt to leave pigment on the capsule. The condition, as a rule, is not a specially painful one. The patients, in Doyme's experience, are invariably gouty. The attacks, although readily relieved by atropine, are apt to be obstinate as regards recurrence. Doyme accounts for the fact that the spots do not easily become adherent to the capsule by supposing that the condition may be due to an exudation between the uveal layers of the iris at the pupillary margin.

SYDNEY STEPHENSON.

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### X.—EYE INJURIES IN RELATION TO WORKMEN'S COMPENSATION.

**Fergus, Freeland. — Discussion on eye injuries in relation to workmen's compensation.** *British Medical Journal*, September 25th, 1909.

The opening paper on this subject at the British Medical Association Meeting, 1909, by **Fergus**, of Glasgow, is well worthy of the close consideration of oculists. To a certain extent, it is a repetition of the author's views which have been expressed before. Notably this is the case where he maintains the working capacity of the average one-eyed man whose employment does not definitely demand binocular vision. Further, for many forms of manual work visual acuteness is not much required. For example, if one select a

point on a flat surface as the fixation point, and place a small object, such as a sixpence, in different positions on the same surface, no difficulty will be found, while holding one eye shut, in striking the sixpence, although the gaze is directed to the fixation point. For most manual occupations a man who has only one eye and who has in it fair vision, good alignment, and good light-sense, is little inferior in earning capacity to the man with two. The subsidiary questions which arise in connection with the Act are more difficult. There is, in the first place, the difficulty which a middle-aged man, whose employment does happen to require binocular vision, finds in changing his employment. In fixing compensation where the lack of binocular fixation destroys a man's power of working at his former employment, the compensation should be for permanent disablement. Secondly, there is the diminished chance of obtaining employment, at the original trade, on account of the presence of the defect. A man may have recovered from his injuries and be fit for his work, and yet because his is an under-average risk an employer, either of his own accord or acting under instructions of his Assurance Company, may refuse to employ this man. This leads the author to deplore the effect which the Act, benevolently intended, has had upon unemployment. "Before long, insurance companies will insist on the medical examination of all employés, and then the wretchedness and destitution, which we regret to think are so characteristic of British city life, will be multiplied enormously." There ought to be a contracting-out clause so arranged that it would not be taken advantage of to defeat the ends of the Act. All who have to do with workmen's injuries will agree with Fergus that many employés regard the Act as a sort of accident insurance. No matter how trifling the injury, the workman regards it as worth money to him, and this he often gets to avoid litigation. Such was never the intention of the Act, which sought to accomplish compensation for incapacity, which aimed at the prevention of destitution during incapacity; but which, in the author's opinion, has caused infinitely more destitution than it has prevented. "Already it has thrown many industrious people out of employment, and the tale of woe has but commenced." Finally, Fergus commends the appointment of medical referees. A workman, knowing that he has to deal with an expert, and not with a non-technical judge and jury, is not so likely to malingere. But the medical referee must be of first-rate professional standing. The plan is good if the referees are suitable; it is disastrous if they are not.

ERNEST THOMSON.

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## XI.—TABES DORSALIS.

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**Ferrier, David.**—A lecture on ætiology and treatment of tabes.  
*Clinical Journal*, March 30th, 1910.

Tabes dorsalis falls so frequently under the notice of the ophthalmic surgeon that **Ferrier's** remarks upon the ætiology and treatment of the affection can scarcely be without interest to the readers of *THE OPHTHALMOSCOPE*.

Tabes is essentially a degeneration of the centripetal tracts of the spinal cord, which manifests itself in perversion, retardation, diminution, or total loss of sensory or afferent impressions, conscious or unconscious. Although the most characteristic symptom of tabes is ataxy, yet ataxy is only one of the symptoms of tabes. Many suffer from optic atrophy, or are subject to



"lightning pains" or visceral or other crises, without ever developing ataxy. The essential element in the causation of ataxy is degeneration of the reflex collaterals to the anterior cornua and Clarke's columns. The essential cause of the ataxy is the loss of sensory impressions which arise in the muscles, the tendons, and the joints. This entails loss of muscular tone. Hence, in tabes there is absence of the knee-jerk and of the Achilles-jerk, which are the most important expressions of this reflex tone. Hypotonia of the muscles is commonly associated with loss of reflex muscular tone. In tabes, however, all sensory impressions may be more or less impaired. Vision may to a large extent compensate for the loss of conscious sensation, and in the absence of vision all disorders of co-ordination are intensified, and this is the pathognomonic feature of ataxy. Although the spinal neuron is the part which is most affected in tabes, the degeneration may affect the optic nerve, the ciliary and sympathetic ganglia, etc. Ferrier agrees with those who believe that tabes and general paralysis are merely different aspects of one and the same polymorphous disease—in the one case there is degeneration of the spinal and in the other of the cortical neuron. It may therefore be said that general paralysis is cerebral tabes, locomotor ataxy is spinal tabes, and the conjoint form known as "tabo-paralysis" is cerebro-spinal tabes.

It is now so generally admitted that syphilis is the principal cause of tabes that it is almost unnecessary to labour the point. Erb's figures dealing with this point are perhaps the most instructive. Among 1,100 cases of tabes occurring in his own practice in men of the better class, 89 per cent. or 90 per cent. had had chancre or some syphilitic lesion, and 10 per cent. only had not been ostensibly affected. In 3 per cent. alone was it impossible to ascertain any ground for suspecting antecedent syphilis. Among 15 tabetic women of the better class Erb found that 86·7 per cent and probably 92 per cent. had been infected with syphilis. The same figures are essentially true of general paralysis, and Erb's percentages practically agree with those which have been obtained by other neuro-pathologists. The general result comes to this, namely, that syphilis cannot be proved in about 10 per cent. of the cases. Important aetiological considerations revolve around this 10 per cent. In considering the question certain points must not be lost sight of. It is generally recognised that tabes often follows syphilis of a type so mild as to escape notice and treatment. Pernet could prove syphilis in only 80 per cent. of the cases in undoubted syphilitic affections of the skin. We may therefore claim that the syphilitic origin of tabes and of general paralysis is statistically at least as well proved as gummatous affections of the skin. Then, tabes occurs on the average seven to ten years after the primary infection, and most frequently in men from thirty to forty years of age, a significant indication, as Ferrier remarks, of indiscretions committed ten years previously. Townspeople furnish more cases than country-folk. Tabes and general paralysis are rare amongst priests, and occur only when syphilis can be proved. The fact that tabes is less common in women of the better class than amongst the others has been attributed by Möbius to the fact that men of the better class are less likely to marry while suffering from infective syphilis. Conjugal tabes is not uncommon, and always, without exception, there has been syphilis on one side or the other. Syphilis, either hereditary or acquired, has been the factor common to the many remarkable cases of family tabes that have been placed on record. It has been shown by Krafft-Ebing that general paralytics cannot be inoculated with the syphilitic virus. Lastly, the Wassermann reaction is usually positive as regards the blood and cerebro-spinal fluid of tabetics and general paralytics.



Amongst the objections to the syphilitic origin of tabes it has been urged that tabes is rare amongst women of the town, while syphilis is common. In answer to this Ferrier points out—first, that tabes is less common among women than among men; and, secondly, that since tabes is a late manifestation of syphilis, it is not so likely to be met with amongst those who are still young enough to carry on their trade. The argument from prostitutes, therefore, does not amount to a great deal. The contention that tabes does not occur in certain countries where syphilis is rife, such as Japan, Abyssinia, and Bosnia, has been proved to be unfounded. The fact that tabes occurs only where infection by syphilis is possible is a point to be remembered. It has been objected against the specific origin of tabes that the disease occurs only in 1 per cent. to 5 per cent. of those who have suffered from syphilis. But some other syphilitic degenerations—as, for example, aortitis and hepatitis—are also exceedingly rare. The small percentage attacked by tabes after syphilis suggests that there may be other co-operative causes, as family predisposition, over-exertion in weakened states of the system, etc.

Most of the facts support the view originally propounded by Strümpell, *viz.*, that tabetic degeneration is the result of a toxin developed by syphilis. The curious thing is that if tabes is the product of the *spirochæta pallida* it should take so long to develop or remain so long in the system without taking on activity. A more or less continuous generation of the toxin must be assumed.

Prevention is all-important. Treat syphilis well and there should be few cases of tabes or general paralysis. The Wassermann reaction of the blood promises to furnish trustworthy indications as to the thoroughness of the treatment adopted.

When tabetic degeneration has taken place, it cannot be removed. At the same time an attempt should be made to arrest further degeneration, to relieve distressing symptoms, and to compensate for the defects of co-ordination that have resulted from the degenerative processes. It is well to bear in mind that every case of tabes is not progressive, although many tend to be so. Speaking generally, mercurial treatment is singularly inefficient in the para-syphilitic affections. At the same time there may be traces of the original virus in the system, and so Ferrier would give the patient the benefit of the doubt by placing him under treatment by inunction or the internal administration of mercurials or iodides. Mercurial treatment, however, when unduly prolonged, is likely to do more harm than good. The author recommends the administration of a combination of the oxy-bromides of arsenic, mercury, and gold, dispensed under the name *Hydraurum* by Messrs. Bell & Croyden, of Welbeck Street, London, W. It is given in doses of ten minims, which contain 1/32 of each of the oxy-bromides named. With occasional intermissions, it may be given for many months or even years. Ferrier has obtained better results from it than from anything else he has tried. Tabetics should be warned against undue muscular exertion and against exposure to cold and to damp. For those who suffer from "lightning pains" it is advisable to winter abroad. Ferrier recommends Egypt or the Canary Islands, or long voyages to southern latitudes, as likely to benefit such patients. When pains do occur, the best remedy is one of the coal-tar preparations, as phenacetin or antipyrin. A good prescription combines ten grains of ammonium bromide with an equal quantity of antipyrin, which, repeated at intervals of an hour, will usually afford relief. For visceral crises, Ferrier has found nothing so successful as the hypodermic injection of morphia. Hypotonia is to be combated by massage, kneading of the muscles, and general Faradisation. The treatment of ataxy is by re-education by means of what are termed "Frenkel's exercises."

SYDNEY STEPHENSON.

## OPHTHALMOLOGICAL INSTRUMENTS

MADE BY

E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK.

- (1) An Electrically Illuminated Amblyoscope.
- (2) Stereoscope Charts, by Dr. Wells, Boston.
- (3) Special Colours for Tattooing the Eye.
- (4) New Standard Phoro-optometer.

The above instruments are briefly described below—further information will be gladly given upon application, or, by arrangement, they can be obtained upon trial.

(1) An Electrically Illuminated Amblyoscope. This electric light attachment is supplied ready fitted to the Worth Black amblyoscope, or as a detachable fitting which can be adjusted to suit any amblyoscope. The control has a special feature not found in other makes, in that it permits either of the two lamps used to illuminate the pictures, to be individually dimmed or more brilliantly illuminated without affecting the other. This arrangement gives more latitude in illumination to a patient, and enables a smaller lamp to be fitted than that used in a system of control whereby as one lamp is dimmed the other automatically becomes brighter. The switchboard is of simple design, consisting of a rheostat fitted with two sliding contacts, working one on each side, and three pairs of terminals—one pair for battery and the remainder for the lamps. The fittings for attachment to the amblyoscope are made to slip on in place of the ordinary picture carriers, and comprise lamp-holder, reflector, and picture holder with spring release. The standard lamps are suited for a 4-volt battery, but other voltages can be fitted to order.

(2) Stereoscope charts for orthoptic exercises. A particularly comprehensive series of exercise charts has been compiled by Dr. Wells. It consists of 47 charts in black and white, and six coloured plates. This collection comprises the best charts produced by Javal, Kroll, Dahlfield and Habe. The charts are supplied in a neat case, with full instructions for use.

(3) Special colours for tattooing the eye. We are prepared to furnish a series of colors specially prepared for tattooing the eye, and which contain no harmful ingredients.

The colours are in powder form and are contained in small glass jars: earthy green, black, yellowish brown, Naples yellow, ultramarine blue, yellowish red, medium brown, dark brown. The complete set of eight colours, in small glass jars, and two glass pestles for mixing, are furnished in a finely nickled case, with spring fittings.

(4) New Standard Phoro-optometer (Meyrowitz model). A most important feature of this instrument, and one which should appeal to Ophthalmic Surgeons, is its usefulness as a means of measuring what may be termed *fusion centres*—of being enabled to order that the prescribed correction shall have the optical centres of the lenses placed at such a distance apart so as to produce perfect fusion on the part of the patient: a very important point in cases of anisometropia.

The thorough examination of the eye for refractive and muscular errors requires a not inconsiderable outfit of apparatus, so that its installation within the limits of an ordinary consulting room is always a matter of some difficulty. Even then it is not always possible to arrange them so they may be used in succession conveniently and without too much loss of time.

The usefulness of the Phoro-optometer, combining as it does in one piece of apparatus all the tests necessary in various steps of the routine examination,

requires no explanation. Besides being a combination of well-known apparatus, several original features have been incorporated in it which serve to increase both the accuracy and convenience of eye testing.

The Phoro-optometer consists essentially of three principal parts—the swinging bracket, the curved arm, and the instrument proper: the latter consisting of a Stevens Phorometer and the equivalent of a three cell adjustable trial frame, which mounted together form the “head” of the instrument. The head may be adjusted to the bar at any angle by means of the set screw, so that it is adapted to both distance and reading tests.

The fixed trial frame has cells for three pairs of lenses; one pair, intended for cylinders, is revolvable by means of two small cog-wheels which project out. A semi-circular scale, graduated from  $0^{\circ}$  to  $180^{\circ}$ , serves to show the axis of cylindrical lenses. The pupillary distance is adjustable and indicated in millimetres on a scale, and there is also a vertical adjustment with scale to serve in hyperphoric cases. Projecting out from between the cells of the trial frame is a small adjustable arm terminating in a small plate. This is adjusted to press lightly against the patient's forehead to maintain the patient and instrument in their proper relative position.

The Stevens Phorometer is so well known as to hardly require any description. The one incorporated in this instrument is the latest model approved by Dr. Stevens, and similar to the instrument manufactured by us during the past twenty years. It is hinged to the “head,” and may be swung out of the way when not required.

We should advise the use of the Phorometer in every case as a complement to the determination of the refraction of the patient. It ensures the certainty of the correcting lenses being worn and to a great extent obviates the necessity of prescribing below the correction until the patient can take the full amount, or in other words “can fuse”—a proceeding which is often misunderstood by the patient. The correction is placed in trial cells and the Phorometer placed in position. Any slight deviation of the red line in respect to the white light will be shown on the scale, and this may be corrected by altering the optical centre of the lenses by means of the milled head (vertically or horizontally) gradually bringing the deviation to zero. If the case is beyond this adjustment it should be treated as usual in cases of imbalance.

For measuring right and left hyperphoria, exophoria, and esophoria, the Phorometer is a standard instrument, and a most convenient way of making the test is to place a Maddox rod in front of one eye, so that when using a point of light obtainable with an iris diaphragm on the Thorington chimney (at about twenty feet distance) as the test object, a red line will be seen before one eye and a white light before the other.

In determining hyperphoria, the lever of the Phorometer and the Maddox rod are brought to the vertical position. The red line will then appear either bisecting the white light, above or below. The lever is then moved till the line passes through the light, and the index will then show the kind and degree of the error.

In determining exophoria and esophoria, the lever and the Maddox rod are brought to the horizontal position, and the line will appear either bisecting the white light or to the right or left. As in measuring hyperphoria, the lever is moved till the red line passes through the light and the kind and degree of the error are indicated in degrees on the scale.

The Phorometer measures up to  $10^{\circ}$ , and beyond this additional prisms must be used.

The “Meyrowitz Bulletin” can be obtained on application to E. B. Meyrowitz, 1A, Old Bond Street, London.



## XII.—MONOCULAR DIPLOPIA.

- (1) **Charles, J. W.**—Monocular diplopia—its relation to hysteria. *American Journ. Ophthalmology*, April, 1908.
- (2) **Pollock, W. B. Inglis.**—On Monocular Diplopia. *British Medical Journal*, September 12, 1908.

(1) According to **Charles**, of St. Louis, monocular diplopia may be divided into four varieties: that which proceeds from physical causes; that resulting from the simultaneous activity of a pseudo-fovea and a normal fovea; that which is associated with cerebral lesion; and that which only can be accounted for by cortical dissociation—the modern hypothesis of hysteria. C. A. O.

(2) **Pollock**, of Glasgow, gives an account of the various ways in which monocular diplopia and polyopia may be produced. Two of the four cases which he reports in detail may be quoted. In the first case a patient of 29 years, with ophthalmoplegia interna, had polyopia when tested with a light at 20 ft. The light appeared to the patient as six or seven lights somewhat on two sides of a small circle, but at irregular distances. A +2D. lens brought about single vision, as did the use of eserine. The author concludes that the symptom was due to irregular refraction at the periphery of the lens, which apparently was not visibly cataractous. In the second case a woman of 34 years with double optic neuritis (choked discs) had monocular diplopia. In the absence of all other visible causes of the symptom, Pollock concludes that the œdema had extended slightly into the macula region, as seemed to be indicated by a striped appearance radiating from the disc. The macula, however, could not be said to be visibly raised or folded. The diplopia occurred during the stage when the œdema was commencing to become less marked, and if the macula had been involved, the regression might be accompanied by a certain degree of shrinking, and the formation of a fold which might account for the diplopia. But nothing of the kind could be definitely asserted on ophthalmoscopic examination.

The author refers, in passing, to Constantin's case in which monocular diplopia was produced by a detached upper part of the retina becoming applied to the lower part. The second image in this case was inverted.

ERNEST THOMSON.

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## XIII.—THE PATHOGENY OF CATARACT.

- (1) **Scalinci, Noe.**—Cataract due to general disease. (La cataratta discrasica.) *Rivista Italiana di Ottalmologia*, Gennaio, 1910.
- (2) **Demaria.**—A contribution to the study of the pathogeny of cataract. (Contribucion al estudio de la patogenia de la catarata.) *Arch. de Oftal. Hisp.-Amer.*, Enero 10, 1910.

(1) This is a review by **Scalinci** of his work on cataract. The following is a slightly condensed translation: "As a result of our researches into the chemico-physical nature of the lens and its behaviour with regard to imbibition in varying liquids (saline, acid, and alkaline) the possible action of the endocular liquid, as modified in its composition by varying abnormal bodily conditions, on the cells of the lens, becomes more readily intelligible. The



theory of Römer, concerning the action of his senile cytotoxin, could only explain the subcapsular form of cortical cataract; further, by being tied to the factor of senility, this theory is unable to offer an explanation of the fact that this form of cataract is frequently seen in people who are not old, and occasionally even in youths.

Our views on its pathogeny are capable, it would seem, of satisfying every demand; for, with the products of altered metabolism, there are assuredly found changes in the blood, and therefore in the intraocular fluids, and thus the action of these fluids in opacifying the lens, is made not only possible but easily intelligible.

This is specially the case in the subcapsular type of opacity: to this form then, we apply the name *dyscrasic cataract*. In the first section of our work, after defining the conception of "senile" cataract, and pointing out the distinguishing marks between cortical and sclerosed cataract, and the mode of development of the opacities common in advanced age, we have dealt with the theories hitherto advanced for their explanation. Here, under the guidance of the most modern ideas of cellular physiology and of general pathology we have criticised Römer's cytotoxic theory, and Dor's theory of lenticular hydratisation, and also have touched briefly on the notions of Fränkel, Peters, and A. Leber, showing that these cannot be accepted for senile cataract. Then, we examined the relation between the so-called senile cataract and the diseases of metabolism, delaying a little to deal with the factor of heredity, and trying to understand it in the light of modern biology. According to our ideas, heredity, as far as it concerns senile cataract, can be explained in the same way as the manifestations of gout, which appear in several members of one family and in several generations, because they are manifestations of disordered metabolism.

In the second part of the treatise, we have published all that we have learnt from long research, on the chemical, colloid, constitution of the crystalline lens and its chemico-physics. We have dealt especially with the results of the study of the action of anions and kations, and of acids and bases on the protoplasm of the lens, and we have arrived at conclusions, which we believe are important, concerning the pathological opacification. The conditions on which the transparency of the lens depends, have been so far not understood (it is in large part due to a perfectly normal process of molecular imbibition), and consequently we have never hitherto been able to gather the causes of its alteration, because we have ignored the chemico-physical factors which secure to the lenticular protoplasm this peculiar property, depending, as it does, on an early differentiation.

While dealing with the so-called nutrition of the lens, we recall how different are the views which obtain now from those that were formerly current concerning the factors which tend to preserve the transparency of the lens and those which are capable of altering it. In this regard we have examined and discussed the researches of Römer on the subject of what he improperly calls toxic actions. Lastly, we have gathered into one small chapter the certain facts, as far as we know them, of the modifications of the blood following on organic "acidosis," and we have explained our tentative experiments to reproduce cataract by organic acidification.

We studied the clinical forms of cataract due to alteration of metabolism, and sought to separate the *dyscrasic* form. We delayed, first of all, to deal with the diabetic variety, so as to make its pathogenesis clear, which has hitherto been ignored. It is a curious fact that all investigators, even the most recent, have taken into consideration only glucose as a possible factor of the opacification, and have omitted all mention of the products of acidity.

We then thought it necessary to examine the nature of the other so-called senile cataracts (which may depend on uricemia, on oxalic or phosphatic diabetes, etc.), and see how far they agree with the diabetic form, both in its ordinary course and in any deviation from this (unusual rapidity, occasional disappearance of the opacity, etc). From these bases we can deduce an analogous determining cause as a common factor, *i.e.*, the organic acidity, varying in degree with the various maladies.

The conditions of organic acidity, by the diminished alkalinity of the blood and the other organic fluids (including the aqueous and vitreous humours), must be considered as possible causes of cataract, both on account of the lessened imbibition of the crystalline lens, and on account of another factor which may combine with the first or act alone to occasion opacity—that is, the changed reaction of the intraocular fluid.

By means of this latter we can explain especially those subcapsular forms of cortical cataract (due in this case to precipitation of phacoprotein); by the first factor would be caused the supranuclear variety. When both factors acted equally, we should find those forms (which are certainly less frequent) in which both the subcapsular and the supranuclear layers are affected together.

In this way the origin of the two varieties of cortical cataract is seen to be due to the same rational factor, an abnormality of the intraocular fluid, acting in different mode in each variety. We can thus do without the special mechanism of desiccation suggested by Hess and retained by Förster and Becker as the pathogenic factor of senile cataract. At the same time we think that the subcapsular variety is due more than the other to the direct specific action of the abnormal components, abnormal either in quality or quantity, and that the supranuclear may depend on the diminution of imbibition, which would naturally show its effects first in the central fibres surrounding the nucleus, which itself does not show change.

To our minds, therefore, there is no reason to continue to give the name “senile” to a very large number of cataracts which are met with between the ages of 40 and 60 years, since, on the one hand, it is certain that senility properly so-called has no part in their formation, and, on the other hand, we find an evident cause in the presence of one of the indicated maladies.

A possible difficulty in accepting this theory may be found in the old notion that it was possible to recognise special points in the form of the various cataracts, diabetic, oxaluric, etc. And the fact that we did not find any such difference has made us think that these conditions had no causal relation. All this becomes clear when we admit as the determining cause, the organic acidity and the diminished alkalinity of the blood, which is the common fundamental property of all these diseases. All the varying forms of dyscrasic opacity are due to the varying action of the same factors; we must not forget, however, that there may be other factors, *e.g.*, alteration of the vessels or of the ciliary epithelium, which may favour the appearance of opacity, and cause superficial variations in the form and course of cataract.

The medical treatment of commencing opacity by means of iodides, which has recently again come into favour, is only reasonable so long as we are dealing with dyscrasic cataract. While we confirm the good results obtained by others, we can explain the action which has hitherto been unexplained while the drugs were used empirically. We believe that it is due to an alteration of the fluid surrounding the lens, and an increase of the alkalinity, which favours the imbibition. It thus furnishes a perfect proof of our views on the causation and pathogenesis of the dyscrasic cataracts.

H. GRIMSDALE.

(2) In this paper **Demaria** deals first with the cataracts of known cause, e.g., the traumatic, and with the recognised pathology of the cataracts due to massage, and then treats of the numerous classes in which the cause is unknown. After discussing at some length the received ideas on the subject of senile and other cataract, Demaria concludes that none is unobjectionable. He points out that in those cases in which cataract in one eye is complicated by the presence of keratitis punctata, the iris is sometimes the seat of definite pathological change, but in one case of this kind the iris was absolutely normal. It is probable that there is a constant lesion of the ciliary body, but this is not proved. It seems almost certain that the so-called secondary cataracts—secondary, that is, to choroiditis or other extensive lesion of the fundus—are due, in respect to their immediate cause, to some alteration of the constitution or amount of the aqueous humour.

Age alone cannot be regarded as the primary factor of senile cataract. It is true that opacities of the lens are more common in elderly people, but they are by no means universally found, as they would be if age alone were the cause. Attempts have been made to show some connection between the presence of cataract and atheromatous degeneration of the vessels, but such cannot be upheld. There is, however, experimental evidence of the importance of healthy vessels: Wagenmann and others, after tying the vorticosæ veins, or dividing the ciliary arteries, observed the development of cataract.

Römer has published a theory of the origin of cataract which compares the changes in the lens fibres to the hæmolysis of a blood-disc, and supposes that, as the result of some toxin, the fibre becomes more easily penetrated by the surrounding fluid.

In this state of the question, Demaria thought it would be of some use to investigate the action of known toxins on the lens. He therefore injected into the anterior chamber of rabbits diphtheritic and tetanic toxin, following this injection, in some instances, by a second dose into the vitreous; there followed a violent iritis, with the formation of posterior synechiæ, etc.; the lens became opaque, especially in the anterior cortex. The lesions after the use of tetano-toxin were much less marked than after injection of diphtheria toxin. The lenses, examined microscopically, showed that the anterior epithelium had undergone degeneration, and had disappeared from the pupillary zone. Demaria concludes that in these cases the opacity of the lens depends on the destruction of the epithelium.

H. GRIMSDALE.

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#### XIV.—OXYCEPHALY.

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**Beaumont, W. M.—Oxycephaly.** *Trans. Ophthalmological Society U.K.* Vol. XXX, Fasc. I, 1910, p. 44.

Oxycephaly, more especially from the standpoint of the ocular associations, is discussed by **Beaumont**, of Bath.

The author does not agree with Patry in looking upon such cases when accompanied by optic neuritis or atrophy as a so-called syndrome. Atrophy doubtless often occurs, but then so do other eye symptoms, such as nystagmus and ptosis. In oxycephaly the optic atrophy is due to diverse causes—as, for example, the result of meningitis, a distortion of the optic foramen, a stretching of the optic nerve, or to bony pressure in any part of its course. It appears that oxycephaly was known to the famous William Mackenzie, to judge from



a passage quoted by Beaumont from the fourth edition of his well-known *Practical Treatise on Diseases of the Eye* (1854). Exophthalmos occurs in about 50 per cent. of the cases, and squint and nystagmus frequently follow. The mental condition of such patients is usually good. It is, according to Beaumont, exceptional for more than one member of a family to be affected. The fact that the male sex is more frequently affected than the female, suggests to Beaumont's mind the possibility that injury by compression at the time of birth may have something to do with causation. Against this view, however, must be placed two points—first, that the deformity characteristic of oxycephaly has been present at birth; and, secondly, that the births of such babies have usually been non-instrumental. Beaumont fancies that “for some unknown reason, the tendency to ossification during intra-uterine life is more marked and earlier manifested in males than in females,” and he is of opinion that this observation may carry us a little way in the attempt to explain the pathology of oxycephaly. In the writer's opinion, trephining is not indicated in cases of oxycephaly. He suggests that when optic atrophy occurs in young people without assignable cause, a careful examination should be made for the existence of oxycephaly.

Beaumont's communication was illustrated with lantern-slides of cases of oxycephaly published by Nettleship, Power, Donaldson, Paton, Coats, Ford, Patry, Stephenson, and George Carpenter. SYDNEY STEPHENSON.

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## XV.—LACRYMAL AFFECTIONS.

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- (1) Villard, H.—Atrophy of the optic nerve consecutive to acute dacryocystitis. (Atrophie du nerf optique consécutive à une dacryocystite aiguë.) *Ann. d'Oculistique*, T. CXXXVIII., p. 24, juillet, 1907.
- (2) Means, Charles S.—Causes and treatment of lacrymal diseases. *Ophthalmology*, January, 1909.
- (3) Worthington, H.—Canula in lacrymo-nasal duct for twenty-eight years. *Journal of Ophthalmology and Oto-Laryngology*, July, 1909.
- (4) Knesius, F. — On permanent drainage of the lacrymal ducts. (Zur Dauerdrainage der abführenden Tränenwege.) *Zeitschrift für Augenheilkunde*, September, 1909.
- (5) Carvill, Maud.—Congenital fistulæ of the lacrimal canaliculi. *Archives of Ophthalmology*, November, 1909.
- (6) Le Roux.—A case of chronic dacryocystitis with spontaneous elimination of a very large sequestrum. (Sur un cas de dacryocystite chronique avec élimination spontanée d'un volumineux séquestre.)
- (7) Corner, S. G.—Congenital blenorrhœa of the lacrymal sac. *Lancet*, 1st January, 1910.

(1) Villard, of Montpellier, narrates the history of a case of optic atrophy due to orbital cellulitis starting from a suppurating lacrymal sac. He gives references to 17 similar recorded cases.



(2) **Means**, of Columbus, Ohio, gives a brief outline of the treatment of disease of the lacrymal sac. His recommendations are as follows: Treatment of nasal disease if present; conservative treatment consisting of the use of Bowman's probes after dilating the canaliculus (he deprecates slitting of the canaliculus and the use of large probes) and thorough cleansing of the sac; if these measures do not succeed, extirpation of the sac. In certain specified circumstances, extirpation is recommended without any preliminary course of conservative treatment. A satisfactory description of Meller's operation is given. Referring to the possibility of lasting epiphora, he estimates that this occurs in six to eight per cent. of cases. If it persists after cure of conjunctivitis and correction of refraction errors, the accessory lacrymal gland should be removed. It is rarely necessary to interfere with the main gland.

A. J. BALLANTYNE.

(3) **Worthington**, of Chicago, removed the canula with little difficulty. How this was done he does not say. The length was  $1\frac{3}{16}$  inch; the material gold.

HENRY L. G. LEASK.

(4) **Knesuis** (Marburg) passes a hollow probe containing a pilot into the nose after slitting up the canaliculi. The pilot is removed and a piece of catgut passed down the canula into the nose. This is sniffed out of the nostrils and seized. A piece of silk is sewn into the top of the catgut, and this is slowly drawn out of the nose taking the silk thread with it. When the silk appears at the nostril the two ends are knotted together and drainage is accomplished. This is a modification of Goebel's operation.

T. HARRISON BUTLER.

(5) In this case a round opening, 1 mm. wide, was present at the inner canthus of the left eye, at the junction of skin and mucous membrane on the inner and upper border of the lacrymal caruncle. It communicated directly with the upper canaliculus. There was nothing to suggest past inflammation, and it was probably a congenital condition.

ROSA FORD.

(6) The size of the sequestrum removed by **Le Roux**, of Caen, was 18 mm. by 9 mm., practically the lacrymal bone.

BERNARD CRIDLAND.

## XVI.—EXPERIMENTAL RESEARCHES ON DETACHMENT OF THE RETINA.

**Birch-Hirschfeld, A. and Inouye, Tatsonji.**—Experimental and histological researches on detachment of the retina. (*Experimentelle und histologische Untersuchungen ueber Netzhautabhebung.*) von Graefe's *Archiv f. Ophthalmologie*. Bd. LXX, Heft 3, Mai 11, 1909.

**Birch-Hirschfeld and Inouye** experimented on rabbits, and by draining off a considerable portion of the vitreous, were able to produce detachment of the retina in a majority of cases. The detachment was sometimes only temporary but persisted in other cases, and the authors find—and this is the most important result of the paper—that in all the latter cases rupture of the retina had taken place, which thus seemed to fix the detachment. The authors found a thin pseudo-membranous layer on the surface of the retina, produced by proliferation of the glia; they feel inclined to attach great importance to the pull of this membrane in the production of the detachment. The histological details of these changes and of the degeneration of the layers of the retina are very interesting, and should be sought in the original.

R. GRUBER.

## XVII.—POST-OPERATIVE INFECTION.

- (1) **Cramer, E.**—A contribution to our knowledge of infection of the globe after operations (Erysipelas). (*Beitrag zu den Erfahrungen über Augapfelinfektionen nach Operationen-Erysipel.*) *Zeitschrift für Augenheilkunde*, September, 1909.
- (2) **Hancock, W. Ilbert.**—Three cases of post-operative infections. *Royal London Ophthalmic Hospital Reports*, January, 1910.

(1) **Cramer**, of Kottbus, operated upon a man for ptosis by Hess' method. Erysipelas set in, which led to a large perforating ulcer, through which the lens escaped. A plastic operation covering the corneal defect with conjunctiva saved the globe, although but little sight remained. T. HARRISON BUTLER.

(2) The first case reported by **Hancock**, of London, was in a man, aged 55, whose mouth was very septic, though otherwise he was in good health. He suffered from cataract, which was extracted without complication. For twelve days he did quite well. The eye then became inflamed. For the first four days the iris remained bright, but it soon became discoloured with much keratitis punctata. The eye recovered, but two months later he had a second attack, while a third developed soon after as the result of a blow. The anterior chamber was tapped under the strictest precautions and a fine culture of staphylococcus was grown from the aqueous. From this a vaccine was made. There was no local reaction after using it, the eye quieted, but the cornea remained partially opaque. T. + 1. About three weeks after the commencement of the third attack, the capsule, which was drawn up to the wound, was divided with a knife, and this induced a fourth attack of irido-cyclitis, which quickly subsided. Vaccine was given in increasing doses for three weeks, when a fifth attack came on, which was more acute than any of the others; there was much iritis and punctate keratitis. Six weeks later a sixth attack developed, which was very severe, and this refused to subside in spite of all treatment and the eye was enucleated six months after the extraction. Before excision it was again tapped, and a pure culture of staphylococcus albus once more grown from the aqueous.

The second patient was a woman, aged 76, who was robust and in excellent health, but her mouth was very septic. A preliminary iridectomy ran a normal course, and seven months afterwards the lens was extracted. On the eleventh day the eye became much injected, the iris discoloured, and there was some pain; this soon subsided. A month after the extraction acute irido-cyclitis developed, with punctate keratitis and hypopyon. A mixed staphylococcus vaccine was given, and although it gave no local reaction, it apparently upset her health, and she developed digestive and cardiac symptoms. A week later she had a third attack of a most acute irido-cyclitis. The eye was excised six weeks after the extraction, and she made a rapid recovery. The lens capsule was found to be incarcerated in the wound, and the iris and ciliary body intensely inflamed. The vitreous and back of the eye were healthy. A pure culture of staphylococcus albus was obtained from the eye; the vitreous was sterile.

The third patient was a man, aged 70, with a very septic mouth. A simple extraction was performed. He made excellent progress until the seventh day, when the eye became very injected, and a week later, the iris was muddy, with a small hypopyon. A week later the eye was quiet. Four days later a second attack developed; T. + 1; hypopyon, and punctate keratitis. This attack quieted with treatment, including staphylococcal vaccines. Six weeks after the extraction, he had a third attack, a hypopyon filling one-third of the anterior chamber, and T. + 1. No pain.

Three months after the extraction Hancock found the eye quiet, but with a large hypopyon, and the patient at his home in the country. Suspecting staphylococcus albus, he was given  $\frac{1}{2}$  c.c. of a vaccine of this organism. The following day there was a most violent local reaction, and he was sent up to town. The eye was intensely red, and the hypopyon half filled the anterior chamber, T. + 1. Projection good. No punctate keratitis. The anterior chamber was tapped and agar tubes were inoculated, and the chamber was washed out with peroxide of hydrogen. The inflammation rapidly subsided, and the patient made a good recovery, and three weeks later he could tell the time by a watch. Xerosis bacilli were grown in the tubes inoculated from the aqueous. From the way the eye reacted to the staphylococcus vaccine it is pretty certain that these organisms were really the cause of the trouble in this, as well as in the other two patients.

In all these cases a good deal of soft lens-matter remained, and the microscopical appearance of the wound suggested that in the first two cases at least the source of the trouble was ectogenous. Staphylococcus aureus, if inoculated into the anterior chamber, gives rise to but little irritation unless in large quantities; but if there is lens-matter present, panophthalmitis will follow the merest trace of the culture. Eyes with much soft lens-matter show usually considerable reaction, and this is due probably to a mild infection. In order to avoid this the author advocates washing out the anterior chamber if the pupil be not free from soft matter, and this he has done with encouraging results. The effects of the vaccines were not good, and several times they produced no effect at all; but the brilliant effect of washing out the anterior chamber with hydrogen peroxide suggested that this should be done quite early when the condition is recognized.

C. DEVEREUX MARSHALL.

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## XVIII.—GLAUCOMA AND ITS TREATMENT.

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- (1) Winselmann, G.—A clinical contribution to the question of a permanent free communication between the anterior and posterior chamber of the eye. *Klin. Monatsbl. f. Augenheilkunde*, August, 1909.
- (2) Borthen, J.—The operative treatment of glaucoma. *Arch. f. Augenheilkunde*, 1909, Bd. LXV, 42-69.
- (3) Fergus, Freeland.—Treatment of glaucoma by trephining. Abstract in *British Medical Journal*, 2nd October, 1909.
- (4) Schoen, W.—How glaucoma is treated. *Centralbl. f. prak. Augenheilkunde*, Oktober, 1909.
- (5) Meller, J.—On sclerecto-iridectomy. (Ueber die Sklerektomie.) *Klin. Monatsbl. f. Augenheilkunde*, Dezember, 1909.
- (6) Jackson Edward.—Recent observations concerning glaucoma. *American Journal of Ophthalmology*, December, 1909.
- (7) van der Hoeve.—Hæmorrhagic glaucoma and iridectomy. *Archives d'Ophthalmologie*, janvier, 1910.
- (8) Semple, N. M.—The relation of the general blood pressure to the pathogenesis of certain ophthalmic diseases. *American Journal of Ophthalmology*, January, 1910.



- (9) **Beard, Charles F.**—The operative treatment of chronic glaucoma other than by iridectomy. A historical commentary. *American Journal of Ophthalmology*, February, 1910.
- (10) **Menacho.**—Optic neuritis as the initial lesion of glaucoma. (*La papilitis optica como lesion inicial del glaucoma.*) *Archivos de Oftalmologia Hispano-Americana*, Enero, 1910.

(1) Hamburger's experiments have shattered the belief in a permanently free communication between the two chambers of the eye. The following clinical observation of **Winselmann** agrees with, and tends to confirm, Hamburger's view.—A workman was seen five hours after a piece of iron had struck his right eye. The skin of the upper lid showed some marks of injury, the pupil and iris were normal, the anterior chamber was perfectly clear, but vision was only 5-20. Light-reflex was obtained from the temporal part of the pupil, and the rest remained dark on ophthalmoscopic examination. A mydriatic was instilled, and ten minutes later, the upper-inner parts of the pupil began to dilate. At the same moment, a droplet of blood-tinged fluid emerged under the upper nasal pupillary margin and hanging into a red streak, sank slowly to the bottom of the anterior chamber. With increasing dilatation of the pupil, more and more blood was seen to enter the anterior chamber until its lower third was filled with blood. C. MARKUS.

(2) **Borthen** (Bergen) reports upon fifty cases of glaucoma in which he has modified Holth's operation of iridencleisis, and has simply brought the iris through the corneo-scleral wound, allowing it to heal in the form of an artificial prolapse under a covering of conjunctiva. In no case of simple or absolute glaucoma did the operation fail to produce the desired result. A good effect was also obtained in cases of chronic inflammatory glaucoma when the inflammation and congestion had not been too intense. In advanced cases, however, with marked ciliary injection, the tension still remained up after the operation.—The steps of Borthen's operation are as follows: lift up a fold of conjunctiva, 10 mm. from the upper border of the cornea, and make an incision 2-3 mm. long with de Wecker's iris scissors. Separate the conjunctiva from the sclera by insinuating the closed scissors between them as far as the corneal limbus, steady the eye with fixation forceps, and pass a keratome underneath the conjunctiva into the anterior chamber, making an incision 4-5 mm. long, 1 mm. from the limbus. With iris forceps take up about 2 mm. of the iris, and draw it just through the corneo-scleral wound. A drop of atropin is instilled into the eye ten minutes before the operation, so as to prevent the iris from returning to its normal position. Both eyes are bandaged for 24 hours. The patient may be allowed to get up on the fourth day.

PERCIVAL J. HAY.

(3) **Fergus'** operation, described as a modification of that of Lagrange, consists in dissecting a large conjunctival flap up to the sclero-corneal margin. With the trephine, a piece of sclera is removed as near to the cornea as possible. Then, the point of a fine iris repositor is passed from the scleral opening right into the anterior chamber. The conjunctival flap is replaced and stitched. The chief advantages of the operation are that it does not require a general anæsthetic, that the lens is not endangered, and that the risk of sepsis is reduced to a minimum.\*

ERNEST THOMSON.

(4) **Schoen** is not a believer in the ordinary theories of the causation of glaucoma, and does not think that iridectomy has any curative effect. He holds that glaucoma is always caused by excessive use for many years of accommodative effort, and that treatment must be directed to remove the cause. Proper correction for distance and near work, and if the glaucoma has

\*See also communication by Fergus in THE OPHTHALMOSCOPE, of February, 1910.



already become pronounced—no near work at all until symptoms have disappeared. He also lays stress upon the correction by prisms of any latent squint, especially in the vertical meridians. To illustrate the above he cites two cases.—Both patients were middle-aged men, who had suffered from glaucoma attacks for some years, and eventually both had iridectomies performed by eminent surgeons. In spite of this, the glaucoma attacks persisted, so that in one of the cases another iridectomy was done, which also had no effect on the glaucoma, although it caused a further diminution of vision. Eventually, these patients came to Schoen, who prescribed proper glasses and gave directions as to near work, and the result was in one case, the glaucoma attacks gradually became less frequent and finally ceased altogether—and in the other—they had become less frequent when the patient was lost to observation.

A. LEVY.

(5) **Meller**, of Vienna, records his experience with Lagrange's operation which was performed in 36 instances. The tension was examined before and after operation with that useful instrument, the tonometer of Schiötz, by means of which an increase of intra-ocular pressure was determined also in cases of glaucoma simplex, where palpation gave doubtful results. Regarding the *technique* of the operation, Meller states, in the first place, that a proper section may be frustrated by a brittle conjunctiva not allowing a good fixation of the eyeball. The root of the iris is liable to be button-holed during the first and second stage of the operation. It is therefore advisable to perform iridectomy before the resection of the sclerotic, and in case of injury to the iris having occurred during the first stage, to use a blunt iris-hook instead of forceps, as the latter instrument is very apt to enter into the anterior chamber through a hole in the iris, and to injure the lens. Traumatic cataract was actually brought about in this way in one case. Further risks to the lens are inherent in the very peripheral and extensive scleral section which, especially in eyes of excessive hypertension, may give rise to dislocation of the lens. An even worse complication is prolapse of the vitreous; this was seen once in Meller's series of cases and necessitated enucleation of the eye on account of irido-cyclitis. In one case, after resection of the sclerotic and on attempting to excise the iris, the scleral section was found to have remained entirely intralamellar; a Bettremieux operation had thus been performed involuntarily, but, and this is of special interest, the result was excellent. The re-filling of the anterior chamber was delayed in a number of cases; it was sometimes due to a detachment of the choroid, which occurred 8 times or in 22 per cent., whereas Fuchs found this complication in only 10 per cent. of glaucoma-iridectomy.

A final judgment on the scar resulting from the operation can be given only after the lapse of several weeks. The various kinds of cicatrices described by Lagrange have also been seen by Meller, but Lagrange's view of these variations being dependent upon the degree of hypertension before operation is not supported by Meller's observations. Cases are described in which a very high tension was materially reduced through the operation, and yet the scars were flat and smooth. On the other hand, a typical ampulliform cicatrix developed in a case of moderate hypertension, in which the operation failed to lower the intraocular pressure. Meller thinks Lagrange unduly optimistic in denying a frequent blocking of the scleral opening by the stump of iris, nor can he follow him in his description of the ampulliform cicatrix as a simple bulla of varying degree of fulness. Meller found rather a gelatinous mass of firm consistency strictly limited to the area of the conjunctival flap; he once had occasion to cut through this tissue in

performing a cataract extraction in an eye which had previously undergone sclerecto-iridectomy. But in spite of discrepancies regarding the structure and mechanism of the filtering cicatrix, the efficacy of Lagrange's operation in lowering the intraocular pressure and its superiority in this respect to simple iridectomy, were proved in the majority of Meller's cases. Frequently, the tension became much lower than the normal, and this result was not restricted to cases with prominent scars. Meller agrees with Lagrange in excluding acute glaucoma from the indications of the operation; here the results of the classic iridectomy are so good as not to warrant a change. In glaucoma simplex simple sclerectomy, allowing myotics to act on a round pupil, should be preferred to the combined operation; Bettremieux's operation is indicated in absolute glaucoma for the relief of pain, where opening of the eyeball, as experience teaches, is attended with the greatest risk.

Short clinical notes of 27 cases form a valuable appendix to Meller's paper.  
C. MARKUS.

(6) This paper by **Jackson**, of Denver, though, as he points out, of a somewhat discursive type, is the kind of contribution to knowledge which is only possible after long clinical experience and wide reading. Thus, Jackson relates (*inter alia*) two cases of glaucoma, radically different the one from the other, in which he was unable to make sure of the diagnosis of glaucoma until years had passed. There is no doubt that the difficulty in some of these cases is realized only after long experience. The author then discusses the relation between increased blood-pressure and glaucoma, illustrating what he has to say by case-histories. Although the paper is full of suggestive ideas and will well repay study, it is not a suitable one for a detailed abstract. Its closing words are these: "In dealing with serious problems, such as one presented by glaucoma, to get a glimpse of them from the point of view of another, is always a help."  
ERNEST THOMSON.

(7) **van der Hoeve**, of Utrecht, reports a case of hæmorrhagic glaucoma, in which he performed an iridectomy with good result. Seen a year later, the corrected vision was 5/5.  
BERNARD CRIDLAND.

(8) The particular ophthalmic disease which **Semple** (St. Louis) has specially in view is glaucoma. After pointing out the uncertainty with regard to the pathogenesis, and running over the different views—very briefly, it may be said—which have been held about glaucoma, the author relates certain cases in which treatment aiming at reduction of the general blood-pressure had a good effect on the eye disease. The cases are three in number, of which one only was frankly glaucomatous, two had retinal hæmorrhages, while one had symptoms resembling ophthalmic migraine with normal fundus. The author speculates as follows:—"In looking at the subject from the standpoint of the eyes in relation to the pathogenesis of the disease (*i.e.*, glaucoma) there are two possibilities to be considered. First, the effect of the increase of the general blood-tension in producing œdema of, and a hypersecretion from, the ciliary body and iris. Secondly, the possibilities of the general blood-pressure acting as an impediment to the exit of the fluid secreted. Both conditions may be present in the same case. That an increase of the normal blood-tension may cause an œdema in other parts of the body has been definitely established, *e.g.*, in the brain. Why should not such a condition present itself in the ciliary processes, when the arterioles are of the most delicate type? . . . Such an œdema would cause a swelling of the ciliary processes, displacing the base of the iris forward, producing the condition which has so generally been considered the immediate cause of glaucoma."  
ERNEST THOMSON.

(9) This article by **Beard** (Chicago) is almost purely historical and calls for no comment, other than the statement that it is very interesting, until the last paragraph is reached. "In conclusion, a few words of caution are deemed fitting. In no case, for instance, should one think of resorting to an intrabulbar operation for chronic glaucoma if by the use of myotics and attention to the general bodily condition, the tension of the eyes could be kept within normal bounds. As regards the best means of keeping in touch with the degree of the intraocular tension, ophthalmologists are rapidly learning that palpation is not to be relied upon, but that the intelligent employment of the tonometer is a prerequisite." With regard to the first portion, at least, of this statement, it seems likely that most ophthalmologists will agree, more especially since the influence of increased blood-pressure as a causative agent has become more and more a subject of investigation. **ERNEST THOMSON.**

(10) Our knowledge, says **Menacho**, concerning the structural lesions of the early stages of glaucoma, is lamentably vague, because of the infrequency with which eyes in this stage can be submitted to exact examination. The detailed examination which can be made by the ophthalmoscope compensates to some extent for this, and Menacho has met in some cases with an inflammation of the head of the optic nerve, to which he is inclined to attach very great importance. **H. GRIMSDALE.**

### XIX.—INFANTILE GLAUCOMA.

- (1) **Ball, James Moores.**—Two rare ophthalmic cases. *Interstate Medical Journal*, January, 1910.
- (2) **Allport, Wilfrid.**—Infantile glaucoma or buphthalmia. *British Medical Journal*, March 5th, 1910.

(1) One of the two cases described by **Ball**, of St. Louis, presented several features of interest. After an attack of ophthalmia neonatorum, both eyes of a baby began to enlarge. Five years later, the child struck her right



eye on the projecting knob of a chair. The appearances four and a half hours after the accident are shown in the accompanying figures. Under chloroform,



the eyeball was replaced, a suture passed through the outer third of the eyelids, and a compress bandage applied. The stitch was removed eleven days later. One year afterwards, a small stump only remained to mark the site of what had once been a hydrophthalmic globe. The other eye increased in size and became so painful that it was found necessary to enucleate it when the child had reached the age of thirteen years. The enucleated eyeball measured 45 mm. in the antero-posterior diameter and 30 mm. transversely. The diameter at the base of the cornea was 28 mm.

Ball's second case was an instance of flat sarcoma of the choroid in a lad, aged fourteen years.

(2) After giving a somewhat pessimistic account of the natural history, so to speak, of infantile glaucoma, **Allport**, of Birmingham, describes a case which he treated successfully by surgical measures.—The patient was then three years of age, had marked buphthalmos, the corneæ were considerably enlarged (no measurements given), and showed, besides, extensive opacities. Tension was high, photophobia was present, and sight was seriously impaired. Anterior sclerotomy, performed upon the right eye in the usual way, led to no permanent lowering of tension. A different plan was therefore adopted as regards the other eye, which was operated on after an interval of some two months. An incision was made as for anterior sclerotomy, but the knife was allowed to cut through the upper part of the intercalary region and after that to undermine the neighbouring ocular conjunctiva for a few millimetres. The practical effect was that the flap thereby cut was anchored in position by means of the conjunctival bridge. The result of the operation more than fulfilled Allport's expectations. Tension soon became normal, and other symptoms gradually abated. A small cystoid cicatrix developed at the summit of the incision, and a minute fistulous opening through the sclera could be recognized at this point. Three months later, the right eye was treated in a similar way with a similar result. When the child was examined in November, 1909—that is, fifteen months after the last operation—tension was normal, and vision, with astigmatism corrected, was equal to reading Jaeger No. 5 at about six inches. SYDNEY STEPHENSON.

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## XX.—OPERATIONS.

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- (1) **Heckel, Edward B.**—A new procedure for treating prolapse of the iris complicating perforating wounds of the cornea. *Pennsylvania Medical Journal*, October, 1907.
- (2) **Straub, M.**—Something about the operation for entropion. (Ond nieuws over de operatie van het entropion.) *Ned. Tydschrift voor Geneeskunde*, 1908, No. 11.
- (3) **Morax, V.**—Palpebral or facial autoplasty by pedunculated flaps taken from the cervical region (Snydacker's operation) and autoplasty in two stages with utilisation of the pedicle. (L'autoplastie palpebrale ou faciale à l'aide de lambeaux pédiculés empruntés à la région cervicale (procédé de Snydacker) et l'autoplastie en deux temps avec utilisation du pédicule.) *Ann. d'Oculistique*, T. CXXXIX, p. 14, janvier, 1908.



- (4) Salzer, F.—Experimental contributions to the question of Keratoplasty. (Experimentelle Beiträge zur Keratoplastikfrage.) *Bericht der Ophthalmologischen Gesellschaft zu Heidelberg*, 1908 (Volume published in 1909, p. 227).
- (5) Straub, M.—The cure of entropion by extirpation of the tarsus. (De genezing van entropion door tarsus exstirpatie.) *Nederlandsch Tydschrift voor Geneeskunde*, 1909, p. 508.
- (6) Jameson, P. Chalmers.—Re-attachment in irido-dialysis, a method which does not incarcerate the iris. *Archives of Ophthalmology*, July, 1909.
- (7) Farid Nasr.—Blepharoplasty. *La Clinique Ophthalmologique*, 10 août, 1909.
- (8) Verderame, Ph.—On transplantation of fat in adherent scars at the orbital margin. (Ueber Fetttransplantation bei adhærenten Knochennarben am Orbitalrand.) *Klin. Monatsbl. f. Augenheilkunde*, Oktober, 1909.
- (9) Vacher, Louis.—A note upon enucleation: a modification in the classical proceeding. (Note sur l'énucléation: Modification au procédé classique.) *Bull. et Mém. de la Société française d'Ophthalmologie*, 1909, p. 345.
- (10) Posey, Wm. Campbell.—Choroidal Hæmorrhage following operations on the globe. *Annals of Ophthalmology*, July, 1909, p. 459.
- (11) Winselmann, G.—A contribution to the operative treatment of astigmatism. (Beitrag zur operativen Behandlung des Astigmatismus.) *Zeitschrift f. Augenheilkunde*, November, 1909.
- (12) Radcliffe, McCluney.—The choice of operation for iridotomy. *Trans. American Ophthalmological Society*, Vol. XII, Part I, 1909, p. 89.
- (13) Golovine, S. S.—Exenteratio orbito-sinualis, a procedure for the extirpation of neoplasms invading the orbit and the cranio-facial sinuses. [Exenteratio orbito-sinualis (procédé d'extirpation des néoplasmes envahissant l'orbite et les sinus cranio-faciaux).] *Ann. d'Oculistique*, décembre, 1909.

(1) Heckel's method is as follows:—"As soon as the eye and the immediate surroundings are rendered as sterile as possible and all other usual and necessary precautions as to asepsis are strictly observed, then a few drops of a solution of eserine sulphate, one grain to the ounce, are instilled into the eye; this is repeated in five minutes, and once again five minutes later, making three instillations at intervals of five minutes. The protruding iris is then grasped by means of a small neat iris forceps and cut off closely to the cornea with small scissors curved on the flat. Then a horn spatula which has been shaved off so that it will easily slip into the corneal wound is gently introduced into the wound and slightly and carefully twisted so as to separate the lips of the corneal wound and thus permit the iris, aided by the myotic action of the eserin, to withdraw into the anterior chamber. The horn spatula is then carefully and gently withdrawn. The result is a clean-cut coloboma and no adherent iris. The same procedure is found practically impossible

without the aid of the myotic action of the eserine. After the iris has withdrawn into the anterior chamber no more eserine is used, in fact after twelve or twenty-four hours it is my practice to use atropin."

CHARLES A. OLIVER.

(2) In **Straub's** opinion, the turning inwards of the eyelashes in entropion after trachoma is due not so much to a retraction of the tarsus, as to a retraction of the scar tissue in the conjunctiva of the upper lid. This retracting tissue draws the skin of the lid with the lashes inwards over the border of the lid. The best operation for these cases should be excision of the tarsus. But since just as good results are given by reposition of the skin by one of the many well-known entropion operations, it seems superfluous to excise part of the tarsus or to make scarifications in its anterior surface, as recommended by some authors.

G. F. ROCHAT.

(3) In cases of cicatricial eversion of the eyelids, **Morax**, of Paris, as a rule gets satisfactory results by transplanting pedunculated flaps of skin from the neighbouring brow, temple, or cheek, but occasionally he finds it necessary to have recourse to **Snydacker's** operation, which consists in transplanting a skin flap from the neck which is left attached by a bridge to a pedicle below the lobule of the ear, and resecting the bridge when the transplanted flap has well taken. When the area to be covered is very extensive, **Morax** instead of respecting the bridge, uses it as a secondary graft, after having thoroughly cleansed it and freshened its edges. The author has performed this operation for: (1) a pigmented nævus of the eyelid and brow (this is fully described in a separate article); (2) severe ectropion following ulcerative syphilitic tarsitis; (3) epithelioma of the lower lid complicated by X-ray dermatitis. In the first two the bridge was used as a secondary graft.

R. J. COULTER.

(4) **Salzer's** (München) object was to try to determine whether a piece of corneal tissue implanted into a defect in a living cornea would become vitalised, retaining its original constitution, or whether it would be absorbed and replaced by the corneal tissues of its host. It was very difficult to succeed in getting the graft to remain *in situ*. **Salzer** was generally obliged to place it in a pocket made in the cornea. He found that in every case the graft became permeated with leucocytes, and was partly or wholly replaced by the tissues of the host. The communication is illustrated by two plates, and is well worthy of study.

T. HARRISON BUTLER.

(5) In severe cases of entropion after trachoma **Straub** saw very good effects follow extirpation of the tarsus. Not only was the position of the border of the lid much better after the operation, but the eye could be kept open much better, the interpalpebral fissure being much enlarged by the operation. **Straub** thinks that for severe cases of entropion extirpation of the tarsus is superior to any ordinary entropion operation.

G. F. ROCHAT.

(6) Sutures are introduced, beginning 2 mm. or 3 mm. behind the limbus and passing through the iris not more than 1 mm. from its detached margin, and then through the cornea. An incision is next made, between the stitches, into the sclera, and between this an iris hook is introduced and made to catch the sutures as they pass through iris and cornea, and withdraw them from the cornea out through the incision. The sutures are then tied. Horse-hair or very fine silk-worm gut should be used, as these pass smoothly through the iris. The needle should have a marked curvature, so that the iris as it is carried forward to impinge against the posterior surface of the cornea is not dragged too far. The sutures should be left in three days. In the four cases operated on by **Jameson** there has been no suggestion of sympathetic irritation, and the results have been very satisfactory.

ROSA FORD.

(8) **Verderame** describes an operation for disfiguring scars, the frequent

result of tuberculous osteitis of the orbit. As the subcutaneous injection of paraffine is not free from risk, it was desirable to look for a safer material to be interposed between skin and bone. Axenfeld employed in three cases with great success adipose tissue, taken from the patient's abdomen. It was transplanted under the skin after the adherent scar has been freely dissected with scissors from the underlying bone. Only a small skin-incision was required. The immediate effect of the operation was a slight prominence in the place of the former depression.

C. MARKUS.

(9) In order to remove a long piece of the optic nerve in cases of intra-ocular neoplasm and the like, **Vacher**, of Orléans, first frees the eyeball as much as possible from its muscular and other attachments, then luxates it from the capsule of Tenon, and seizes the nerve by curved forcipressure forceps introduced very deeply into the orbit. He then divides the optic nerve with curved scissors between the eyeball and the forceps. The globe having been removed, it is then a simple matter to liberate deeply the optic nerve and even to divide it at its exit from the optic foramen, should such be necessary.

SYDNEY STEPHENSON.

(10) **Posey**, of Philadelphia, relates the histories of two cases occurring in his practice:

CASE I.—A male, 68 years old, had extraction of a senile cataract. Coincident with the corneal incision severe pain was complained of. Immediately after the delivery of the lens, and without any apparent cause, a quantity of vitreous escaped, followed by free hæmorrhage. Bandaging, hypodermic injections of morphine, and postural treatment were carried out. On the following day blood was still escaping from the eye. Enucleation was advised but refused. Eight months later globe was in a state of phthisis bulbi and the fellow eye free from disease. It is interesting to note that the latter eye had been operated upon for cataract three years previously with a most satisfactory result.

CASE II.—In this case a cataract was removed from the right eye by the combined method (the left eye had a similar operation performed four years previously with satisfactory result). Twelve hours later the patient vomited and the outer pillar of the iris prolapsed and healed in the wound. The result vision was excellent, but subsequently secondary glaucoma ensued, and despite the use of myotics, an operation became necessary. An anterior sclerotomy, after the method of de Wecker, was performed. Sudden pain was experienced during the section, but no blood appeared in the pupil. At the first dressing, 24 hours later, the wound was closed, "but the vitreous appeared hazy and the choroid was thought to be detached." Subsequently the eye passed into a state of low-grade uveitis with subnormal tension.

The first case is an instance of detachment of the choroid occasioned by excessive hæmorrhage from that membrane. Posey remarks that pain is the first symptom to attract the surgeon's attention. Hæmorrhage may follow at once or may not appear for minutes, hours, or days. Vomiting is not infrequent. The escape of vitreous is not always an added complication. The general state of the patient does not exercise any determining factor, for though many possess atheromatous vessels, yet they are not more so than the large majority of patients who successfully undergo the operation for the removal of cataract. A very remarkable fact is that many of the cases of choroidal hæmorrhage have occurred in eyes, the companions of which have been successfully operated upon on previous occasions. In Posey's cases the unaffected eyes showed no vascular lesion of the fundus oculi.

JOHN WHARTON.

(11) **Winselmann** (Bremerhaven) was consulted by a patient, aged 16 years, who had in his right eye a mixed astigmatism of + 2.5 D. horizontal and - 2.5 D. vertical, corrected by a cylinder of - 5 D. at 10°. The patient was uncomfortable with this glass, which raised his visual acuity to 5/20. Winselmann made a cataract incision inclined to 10°, which he did not complete as the patient was not quiet and he feared iris prolapse. Perhaps the patient's lack of control may have been due to the local anæsthetic alypin, which has recently been unfavourably reported upon from India.\* The resulting vision was 5/10 without correction and with a + 1 cylinder at 100° 5/7. Five months later, the best correcting glass was - 1 D. at 10°.

\*See THE OPHTHALMOSCOPE, 1909, p. 665.



The author says that he can find no example of such an operation except that published by Silex. It is obvious that he is unacquainted with English ophthalmic literature. Some years ago E. E. Maddox published a similar case in the *British Medical Journal*.

Winselmann does not state the condition of the left eye.

T. HARRISON BUTLER.

(12) In discussing methods of dealing surgically with obstruction in the pupillary area following cataract operation, **Radcliffe**, of Philadelphia, at once dismisses Bowman's operation, concerning which he remarks that it has "practically fallen into disuse, owing to the difficulty of its execution and the additional opportunity that the two corneal incisions afford for the introduction of infection and the exit of fluid vitreous." The de Wecker operation, although it often yields a good result, has dangers inseparable from its nature. For example, the large corneal opening affords an easy exit for vitreous and a correspondingly easy entrance for infection, in addition to the extensive traumatism to the eye. On the other hand, Ziegler's V-shaped iridotomy with a knife-needle has all the elements of a perfect operation—simplicity, safety, and the minimum of traumatism. According to Radcliffe, it possesses all the advantages of the de Wecker operation without any of the disadvantages of the last-named. The method of performing Ziegler's operation was described in *THE OPHTHALMOSCOPE* recently (1909, p. 581). After a somewhat extensive experience during the past four years, Radcliffe lays stress upon the following points: (1) the employment of Ziegler's modification of the Hays knife-needle;\* (2) the avoidance of all pressure in making the incisions; (3) the necessity of making the incisions in the iris by means of gentle, sawing motions of the instrument; and (4) the need of perfect artificial illumination during operation.

To judge from Radcliffe's illustrative cases (of which seven are given), the results of the operation recommended leave little to be desired. Case No. 2 may be selected as an example. As the result of irido-cyclitis after the



Fig. 1. Occlusion of pupil with displacement.



Fig. 2.—Iridotomy, showing shape of pupil immediately after incision.



Fig. 3.—Iridotomy, ultimate appearance of pupil.

combined extraction of cataract, the pupil was displaced and completely blocked, and sight was reduced to perception of light. Forty-six days after the original operation, a V-shaped incision was made in the iris, with immediate results as shown in the second figure. The final shape of the pupil is shown in the next figure, when, vision with correction was 20/20 partly.

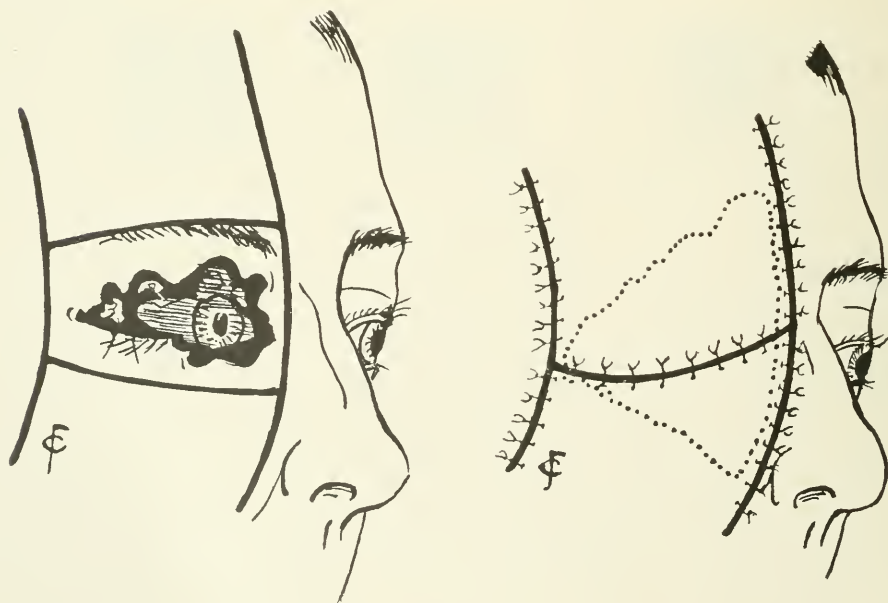
In the discussion that followed the reading of Radcliffe's communication, **Callan**, of New York, criticised the operation adversely, and stated that he had seen eyes lost by the method. **de Schweinitz**, of Philadelphia, was convinced that the Ziegler operation had "come to stay." He praised it highly. **Hansell**, of Philadelphia, spoke well of the knife used by Ziegler. **Ziegler** himself had used the knife-needle in hundreds of cases, and although he had probably had a few failures, had found the operation almost uniformly successful.

SYDNEY STEPHENSON.

\* This instrument can be obtained from Messrs. John Weiss and Son, 287, Oxford Street, London, W.



(13) **Golovine**, of Odessa, has devised an operation for removing malignant neoplasms of the eyelids and their prolongations into the neighbouring cavities by transforming the orbit and neighbouring sinuses into a single roomy cavity, all parts of which can be easily explored and curetted, and closing the cavity by musculo-cutaneous flaps. I. Incisions (*see* figure) are made: (a) Internal vertical commencing in the middle line 2 or 3 c.m. above the glabella and running downwards over the forehead side of the nose and naso-labial fold to a point 1 cm. below the ala nasi. (b) External vertical at the external angle of the eye following the semi-circular line of the frontal bone and terminating 2 cm. below the zygomatic process. (c) Superior horizontal from (a) to (b) above the tumour, *i.e.*, usually along the eyebrow. (d) Inferior horizontal from (a) to (b) below the tumour, *i.e.*, usually a little lower than the inferior margin of the orbit. The incisions resemble an H with two transverse bars. The frontal and malar flaps are reflected as far as the edge of the hair and the alveolar process respectively, when the edges of the orbit are easily defined. II. The eyelids, eye, and contents of the orbit with the periosteum are removed, in one piece if possible, and the walls of the orbit are examined. III. The anterior and superior walls of the antrum of Highmore, the ascending process of the superior maxilla, the lacrymal bone, part of the nasal bone, part of the nasal process of the frontal bone, the lamina papyracea of the ethmoid, and the anterior and inferior walls of the frontal sinus are removed with scissors and curette. After opening into the nasal cavity the parts usually infected by the neoplasm are removed, while all the septa of the ethmoid are also removed, laying bare the anterior part of the sphenoidal sinus; finally, the posterior walls of the antrum of Highmore and the frontal sinus and the remains of the orbital walls are curetted. There is usually considerable hæmorrhage at this stage, which makes it necessary to turn the head backwards. IV. The frontal and malar flaps are sutured together leaving an H shaped wound (*see* figure), and some gauze



is passed through the nose into the cavity beneath them.

Golovine claims that this operation represents the limit of what can be done by the surgeon in severe cases, except in those rare instances in which the sphenoidal cells have also to be cleaned out; but it is, of course, unnecessary to open up any sinus which is not affected. He has performed it more than ten times, and finds that, as a rule, it is well borne, and that the flaps heal by first intention. Sometimes part of the transverse incision re-opens, but it can be closed by a fresh suture when the tissues have had time to thicken. A great deal of the cavity externally and over the antrum of Highmore becomes filled with new tissue; but over the nasal cavity and the internal part of the orbit the skin remains stretched like a membrane, probably because the nasal mucous membrane spreads over the inner surface of the flaps. The æsthetic result may be considered as satisfactory, as the orbit is covered by smooth, slightly depressed skin. The author first performed the operation twelve years ago, but, unfortunately, the records of his earlier cases are not now available. He gives histories of five recent cases, with illustrations of the conditions before and after operation. One patient had no sign of recurrence ten months after the operation, but there is no subsequent history given in the other four cases.

R. J. COULTER.

## XXI.—REMEDIES.

- (1) Jadin, K.—On the use of thiosinamine in some diseases of the optic nerve and retina. (Ueber die Anwendung des Thiosinamine bei einigen Erkrankungen des Sehnerven und der Netzhaut.) *Zeitschrift für Augenheilkunde*, September, 1909.
- (2) Bennett.—Ophthalmoplegia totalis (hysterical) cured by psychotherapy. *Ophthalmic Record*, January, 1910.
- (3) Klinedinst (York, Pa.).—Varix or an Angioma venosum of the orbit cured by alcohol injections. *Ophthalmic Record*, January, 1910.
- (4) Ohly, John Henry.—Remarks on the need of sedative treatment in ophthalmic surgery. *American Medicine*, January, 1910.
- (5) Fernández, Francisco M.—Advantages of alypin anæsthesia. *Therapeutic Gazette*, January 15th, 1910.
- (6) Brav, Aaron.—The therapeutic value of diaphoresis in the treatment of ocular diseases. *American Medicine*, February, 1910.
- (7) McFarlane, Murray.—The use of adrenaline chloride in special work on the eye, ear, and throat. *Canada Lancet*, March, 1910.
- (8) Schneider, Rudolph.—Experimental researches concerning the value of the "Leukins" for the cure of infectious inflammations of the conjunctiva. v. Graefe's *Archiv f. Ophthalmologie*, Bd. LXXIII, No. 2, S. 223, and *American Journal of Ophthalmology*, March, 1910.

(1) Thiosinamine is urea in which the oxygen of the CO—group has been replaced by sulphur, and an atom of hydrogen in the amido-group N H<sub>2</sub> has been replaced by the allyl remainder C H<sub>2</sub>, C H, C H<sub>3</sub>. It has the structural formula.



Its sodium salicylate is on the market under the name of "fibrolysin."

The drug was introduced by Hebra, who obtained good effects in leprosy. Grunert used it in optic atrophy and cicatricial ectropion after lupus, with favourable results. Schleimer unsuccessfully tried it for corneal nebulæ, and Nieden agrees with Schleimer that no effect is visible upon nebulæ. Uhthoff failed to benefit cicatricial trachoma. Bruno Dominico noticed a clearing-up of opacities in five cases of macula corneæ. Brundenbury tried to confirm Dominico's result, but found that thiosinamine was useless. Dolganows found that cases of optic atrophy rapidly improved. Galezowski also believed that fibrolysin was very useful in such conditions. Armaignac arrives at an absolutely contrary decision. In no case could he decide that the drug exerted any favourable influence. In a word, the opinions are divided, some surgeons thought that they obtained good results from the use of thiosinamine, but a larger number found it absolutely without effect upon a similar class of case.

**Jadin**, of Odessa, decided to investigate the question for himself. He used thiosinamine subcutaneously, injecting from  $\frac{1}{3}$  to a whole Pravatz syringe-ful of a 10 per cent. solution in water and glycerine on alternate days. The back was the region usually chosen. The injection caused much transient pain, but no general toxic symptoms were noticed.

Twenty patients were selected with the following conditions:—

Tabetic atrophy	...	...	...	5 cases
Optic atrophy, cause unknown	...	...	...	8 „
Retinitis pigmentosa	...	...	...	2 „
Optic atrophy with neuritis	...	...	...	2 „
Acute neuritis of syphilitic nature	...	...	...	1 case
Retrobulbar neuritis	...	...	...	1 „
Retinitis proliferans	...	...	...	1 „

Each patient received 30-40 injections, with the exception of the case of acute neuritis, which became so much worse that only 11 were given.

The results were these:

Not one of the five cases of tabetic atrophy shewed the faintest improvement; four of them certainly became worse.

Three of the eight cases of optic atrophy of unknown cause were uninfluenced by the treatment; five became worse. Retinitis pigmentosa was unaffected. The case of acute neuritis became very much worse. Diffuse vitreous haze appeared, and vision rapidly deteriorated. When the injections were abandoned, and an antisiphilitic cure was commenced, the eye improved. The other cases were uninfluenced by the drug. In fact, the result of the author's experiments shows that the treatment with thiosinamine did not in a single instance do any good whatever, whereas in many cases it appeared to be harmful to the eye.

Recently, Otschapowskis has tried thiosinamine in five cases of recent corneal opacity, and in eighteen of optic atrophy—the results were absolutely negative.

The paper is a useful one. A critical survey of the whole question leads inevitably to the conclusion that for the ophthalmologist thiosinamine and fibrolysin have little if any value.

T. HARRISON BUTLER.

(2) Nine days after vaccination (unsuccessful), a boy, aged 7 years, with neurotic personal and family histories, developed complete ophthalmoplegia externa and interna. Fundi were normal and vision was  $\frac{6}{12}$  in each eye (hypermetropia of +0.50). General health perfectly good. After failing to obtain any improvement in the ocular condition by three weeks' treatment with syrup. acid. hydriodic, and tinct. nucis vom., **Bennett**, of Buffalo, instructed the mother to talk to the boy when he was fast asleep in bed, and assure him

that his eyes would be better in the morning, and to talk encouragingly to him during the day. After five days of this suggestive treatment, the paralysis disappeared, the pupils, ciliary, and extrinsic muscles all regaining their normal actions, and vision returning to  $\frac{2}{3}$ .

J. JAMESON EVANS.

(3) **Klinedinst's** patient—a man aged 31 years—noticed the peculiarity about his right eye five years before he came for examination. In the sitting and erect positions the eye looked normal, but on stooping or inclining the head to the right or in any way compressing the right jugular vein, the outer half of the right lower eyelid became of a bluish colour and bulged forwards. The external half of the tarso-orbital sulcus became obliterated by a bluish swelling, like an enlarged vein, about a quarter of an inch in diameter. If this state was maintained for some time it gave rise to a sense of fulness with dull pain in the eye. There was no exophthalmos or impairment of vision at any time, and no *bruit* or pulsation was perceptible. Fundi, nose, throat, and pharynx normal.

The patient having refused consent to have the enlarged veins excised, electrolysis (negative pole three times, positive pole twice) was tried without effect. The author then decided to endeavour to set up a periphlebitis by injecting alcohol around (not into the veins) the vascular tumour. After anæsthetizing the conjunctiva with cocaine, three drops of alcohol were injected into the orbit by means of a hypodermic syringe. This was followed by sharp pain lasting a few seconds and a soreness lasting a few days. The swelling was not so great a week later, when five drops of alcohol were injected with similar results. After another week six drops were injected, and this caused much pain with marked swelling and bulging of the lower lid and the tarso-orbital sulcus, but there was no exophthalmos or impairment of vision. The swelling and pain subsided under iced applications, and a week later, the venous tumour had entirely disappeared and could not be reproduced by any of the ordinary means. Five drops of alcohol were again injected as a precautionary measure against recurrence. The author assumes that the treatment set up a mild cellulitis or a periphlebitis followed by a thrombophlebitis and organization of the clot, with obliteration of the veins.

J. JAMESON EVANS.

(4) **Ohly**, of Brooklyn, advocates the giving of sedatives to patients before and after the more serious operations on the eye. He singles out for special mention a preparation known as "Bromural," which, we learn, is alpha-monobrom-isovaleryl-urea. Of this remedy, he prescribes five grains every four hours, and ten grains at night, for the four or five days immediately before operation. The same remedy is administered in somewhat larger doses for a week after operation.

SYDNEY STEPHENSON.

(5) **Fernández**, of Havana, has employed alypin for a considerable time, and has not met with any unpleasant after-effects. He has used it almost constantly for the removal of foreign bodies, for the excision of pterygia and other superficial growths, and also prior to the application of silver nitrate and other caustics.

SYDNEY STEPHENSON.

(6) **Brav**, of Philadelphia, advocates diaphoresis in the treatment of certain diseases of the eye and describes the ways and means whereby it can be secured, even in the poorest of homes. He prefers to induce sweating by means of baths, as Turkish or Russian, rather than by the aid of such cardiac depressants as pilocarpine. Among conditions particularly benefited by diaphoresis Brav instances the toxic amblyopias and affections of the eye connected with the uric acid diathesis. The suggestion is made that every ophthalmic hospital should be provided with facilities for hydrotherapeutic measures.

SYDNEY STEPHENSON.



(7) This communication by **McFarlane**, of Toronto, already published elsewhere, has been abstracted in the columns of *THE OPHTHALMOSCOPE* (see 1909, p. 868).

(8) **Schneider** has satisfied himself by experiments upon animals that the clinical value of silver nitrate in conjunctival inflammations is due to the fact that it causes a rapid and intense emigration of leucocytes, which contain substances called "leucins" liberated under the influence of the remedy. These differ from alexins in several respects—as, for example, their thermostability and their influence upon micro-organisms against which the serum is ineffectual. These bactericidal substances are liberated even by solutions as weak as 1/10 per cent. Protargol and zinc sulphate also possess the power of determining the excretion of "leucins." In brief, then, although the normal secretions of the lacrymal gland and conjunctiva contain no bactericidal, hæmolytic, or opsonizing substances, yet under the influence of silver nitrate, protargol, and zinc sulphate, leucocytes wander into the conjunctival sac, where they liberate their "leucins." The curative action of the agents named depends, not upon the formation of an eschar, but more particularly upon their powers of provoking the excretion of "leucins." The chief weapons in the natural resistance of the eye are alexin, phagocytosis, and "leucin." The aim in combating infective inflammations of the conjunctiva should be to produce a large amount of "leucin."

SYDNEY STEPHENSON.

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## BOOK NOTICES.

**Des Névrites Optiques et Névro-Rétinites au cours de la Grossesse et pendant l'Allaitement.** (On Optic Neuritis and Neuro-Retinitis during Pregnancy and Suckling.) By **JULIEN PLEY**. Thèse de Paris 1908. Paris: A. Michalon, 10, Rue de Vaugirard.

The following conclusions are reached by Pley:

Optic neuritis and albuminuric neuro-retinitis are due to a common cause, namely, the auto-intoxication of pregnancy. Pure optic neuritis, the so-called retrobulbar form, is rather a neuritis of the visual cells. Neuritis and neuro-retinitis are almost always bilateral, and usually appear in the second half of pregnancy. The gravity of their prognosis is often related to the precocity of their appearance, the condition as regards relapses, and the general health of the patient. Neuro-retinitis is relatively infrequent among pregnant women suffering from albuminuria. Its prognosis is rendered worse by the existence of a preceding nephritis. The fundus lesions do not appear to furnish exact indications for prognosis and the necessity of obstetrical interference, at least unless especially grave changes can be found. When dealing with a pregnant woman affected with neuritis or neuro-retinitis, we should institute without delay proper local and general treatment, which nearly always prevent the march of the disease, and allow the pregnancy to follow its normal course.

SYDNEY STEPHENSON.

**The Optic Nerve and the Accessory Sinuses of the Nose.** By **PROFESSOR A. ÓNODI**. Authorised translation by **J. LÜCKHOFF, M.D.** London: Baillière, Tindall, and Cox, 8, Henrietta Street, Covent Garden. 1910. Price 10s. 6d. net.

Ónodi's famous monograph *Der Sehnerv und die Nebenhöhlen der Nase* (for review see THE OPHTHALMOSCOPE, 1908, p. 337) was published in the year 1907. It contained twenty-seven illustrations. The present edition, Englished by Dr. Lückhoff, of Cape Town, contains fifty illustrations, as well as the substance of addresses delivered by Ónodi at Vienna in 1908 and at New York in 1909. It is beautifully printed and magnificently illustrated.

The book is divided into two parts, *viz.*, I. topographical anatomy (68 pages), and II. clinical considerations (33 pages). By an unfortunate omission, no index has been provided.

The more intimate relationships between the optic nerves, on the one hand, and the nasal accessory sinuses, on the other, are described in minute detail, every point being illustrated by superb plates of life size. Ónodi's investigations show that there are no fewer than thirty-eight variations in the relationships between the nerves and the most posterior ethmoidal cell and the sphenoidal sinus. These he arranges, in twelve groups, for particulars of which the original must be consulted. Ónodi then describes anatomical features which play an important rôle in visual disturbances caused by disease of the accessory sinuses. A point here is the thickness of the bone which intervenes between the optic nerve and the neighbouring sphenoidal or ethmoidal sinuses. Another factor of importance is a deficiency—a so-called "dehiscence"—in the walls of the accessory sinuses. Such gaps, which may be of congenital origin, or may be due to injury, senile atrophy, or pathological processes, may favour orbital, intra-cranial, or optic complications of sinus disease. Openings for the passage of blood-vessels may determine the same result. These defects have been observed in the maxillary antrum, the os planum of the ethmoid, the frontal sinuses, the lamina papyracea, the sphenoidal sinus, and the carotid canal. On the other hand, the wall of the optic foramen rarely shows dehiscences. A canal, called by Ónodi the "semi-canal is ethmoidalis," may play an important part in the transmission of disease, seeing that its mucous membrane is in contact with the periorbitum, at one end, and with the dura mater, at the other. It runs in the wall of the frontal sinus or in the orbital cells to the anterior fossa of the skull, and conveys the ethmoidal veins. Another factor not to be left out of account in the spread of disease and in the causation of perforation are extremely thin septa between individual sinuses. Thus, the maxillary and the sphenoidal sinuses may be so large as to lie in direct opposition, or the frontal sinus may possess a septum in common with the sphenoidal sinus and the posterior ethmoidal cells. Finally, the developmental anomaly called by Ónodi the "turbinate bone cells," may be present in both superior and middle turbinate bone, and in consequence of disease, they may become enlarged to a varying degree. Those belonging to the superior turbinate bone, when distended by pathological changes, may come into relation with the optic nerve.

In the clinical section of the book Ónodi brings together many recorded cases of visual disturbance associated with or caused by diseased accessory sinuses. He insists, however, upon the difficulty often encountered in connecting the two as cause and effect. Indeed, the possibility of accidental association must always be borne in mind. As he remarks, "Accessory sinus suppuration may be present in cases of optic neuritis or optic atrophy, and be apparently in causal association, and yet be independent and unassociated with it." Ocular symptoms in sinus cases may be due to mechanical lesions or to a spread of infection from the diseased sinus by direct continuity, by the blood- or lymph-vessels, or, finally, through osseous deficiencies.

The stereotyped explanation which assigns optic neuritis to suppuration of the

sphenoidal sinus alone can no longer be accepted. The optic nerves, as pointed out by Ónodi, may lie in close proximity to the ethmoidal cells, and at the same time bear no relationship whatever to the sphenoidal sinuses. It has been maintained by Mendel and Lapersonne that, broadly speaking, a one-sided optic neuritis is referable to intra-nasal disease. As double optic neuritis, says Mendel, is characteristic of intracranial mischief, so unilateral optic neuritis, he claims, is characteristic of orbital disease. The law cannot be maintained, however, for against its application is every case in which double visual disturbance occurs associated with unilateral sinus suppuration. Elsewhere, Ónodi shows that such a double affection may arise from disease of the posterior ethmoidal cell or sphenoidal sinus of one side. But the generalisation of Mendel and Lapersonne is correct to this extent, namely, that the majority of visual disturbances caused by accessory sinus disease have been unilateral.

Ónodi takes it as firmly established that accessory sinus disease, both ethmoidal and sphenoidal, may cause visual disturbance or blindness on one or both sides or disease of the optic nerve of the opposite side. As to the clinical diagnosis of such cases, two points must be borne in mind. First, that although the fundus oculi may appear to be normal, yet serious visual defect may be present or the visual field may show changes. Secondly, that the nasal cavities may look normal or show but slight changes, while suppuration is nevertheless present in one or more of the sinuses. Ónodi emphasises the point that when in eye cases accessory sinus disease is a possible factor, the rhinologist should not rest content until he has proved that there is no latent suppuration.

SYDNEY STEPHENSON.

**Valeur comparative des divers Modes d'Éclairage. (A Comparison of the different Methods of Illumination.)** Rapport présenté le 2 mai, 1910, à la Société française d'Ophtalmologie, Congrès de 1910, par le Professeur Gariel (de Paris).

This pamphlet commences with a brief description of the nature of light and its mode of propagation by waves of definite length and duration, the formation of the complete spectrum with its colorific and actinic or ultra-violet rays. The invisibility of the infra-red rays, it is pointed out, is due to their absorption by the aqueous media of the eye, whilst the ultra-violet rays are to a large extent absorbed by the crystalline lens, as demonstrated by the experiments of Brücke, Regnaud, Chardonnet, Saillard, and Gazet.

In order to determine the relative value of illuminants, it is expedient to have a common standard and the various forms of photometers fulfil this purpose; but the standard units of illumination vary in different countries, and hence are of no value for comparison. Thus, Dumas and Boussingault used a Carcel lamp so regulated as to burn 42 grammes of colza oil in one hour. The bougie, or wax candle, has also been used in France, and a candle of definite size and weight in England. More recently, an international unit has been proposed, under the name of its devisor, Violle, who was a French physician. The "Violle" represents the illuminating powers of a surface of platinum of the size of 1 centimeter square, at the temperature of solidification. The Violle corresponds to 2.08 Carcel. The international bougie adopted in America and in England, the so-called *bougie décimale*, is equal in illuminating powers to 2/10 Violle. In Germany they have a different unit, the "Heffner," which is the light obtained by burning acetate of auryl under certain conditions; the illuminating power is 0.9 of the international bougie—that is to say, the bougie international is equal to 1.1 Heffners.



The illuminating power of any light is estimated numerically by a special unit to which the name of "lux" is given. The lux is the illumination produced on a plane surface by a source of light equal to one decimal bougie placed at a distance of one meter, the illumination varying inversely as the square of the distance. With the ordinary small size of our sources of illumination, this size is a negligible quantity.

The influence of rapidity of exposure to very bright light is worthy of consideration. In lighting a candle or a lamp, the illumination is gradually increased in intensity, with gas it is more rapid, but with electrical apparatus it is instantaneous, and the sudden variation from darkness or dim light to a vivid flash, may have troublesome consequences. With the employment of the arc light, it has been estimated that the light is equal to 2,500 candles per square centimetre.

The ill-effects can be in part obviated by the use of a ground glass or translucent shade; but, unfortunately, there is a loss of illuminating power which may amount to twenty per cent.; yet with this disadvantage the use of such shades has become very common.

An improvement on this mode of diffusing the light has been suggested by the construction of the globes termed 'holophole' which emits light in all directions through transparent media which have the surface faceted.

Lastly, the illuminant should not cause any ill-effect on the retina. As a rule, the lamps used for illuminating our streets and rooms are innocuous, though they emit ultra-violet rays, partly on account of the globe by which they are surrounded, by which these rays are, to a large extent, absorbed, partly by the diminution of their intensity owing to distance, and partly by absorption through the air.

The mercurial vapour arc is not likely to come into general use, but the radiations from this source, unless they traverse quartz or uviol tubes, which transmit ultra-violet rays, are not likely to become troublesome.

Of the ill-effects of general electrical illumination, Prof. Gariel is sceptical, adducing a good case in point.—On a certain evening in 1889, it was announced that the Opera House of Paris would be illuminated by electricity, instead of by gas. On the following morning a gentleman consulted him complaining of headache and visual troubles, which he regarded as due to this Satanic innovation. Subsequent enquiry elicited the fact, that, owing to some defect in the installation of the electricity, gas continued to be used on that occasion.

Prof. Gariel then discusses the distribution of light in rooms, and is in favour of numerous lights of comparatively small intensity, as against a few of great intensity with dark shadows; and they should be placed above the level of six feet from the eyes, not only to avoid too great proximity to the light, but also to reduce exposure to the heat generated.

Two points have to be considered in the general question of illumination, *viz.*, the amount of light required, and the nature and disposition of the burners. We say of an apartment, that it is well or badly lighted, but never attempt to estimate the degree of illumination, even approximately. M. de Neville, however, has done so, and finds that the lighting of the orchestra and portions of the Paris Opera is equivalent to from 10 to 13 lux, that of the saloon (*foyer*) from 10 to 20 lux, and falls to from 1 to 5 on the stage; in ballroom scenes it rises to from 10 to 30 lux. In a room near the open window, but not in direct sunshine, the light varies from 110 to 200 lux. On a rainy day it falls to 40 lux and at 5 p.m. to 24 lux. On a bright day the sun's rays falling on white curtains it may rise to 1,100 lux. The light of the moon equals  $1/3$  lux. Javal in France, and Cohn in Germany, attribute myopia in schools to indifferent



lighting. The light should equal at least 15 lux for all delicate work, as watchmaking, embroidery, drawing, etc.; but for other work it may be reduced to 10 lux. In France an illumination of 15 lux is recommended for tailoring and for typography. For schools it should amount to from 15 to 20 lux. Sharpness of vision, is, with sufficient illumination, best obtained by a yellow or white ground.

Luminous bodies, as a rule, do not give the sensations of different colours, although sometimes, as in the case of ignited spirit containing common salt, they emit rays of only one length of wave, or at least of a length greatly predominating over the rest, when they are termed monochromatic, or, as in the case of the solar rays and those of our ordinary illuminants, there are waves of so many different lengths that they give a sensation dependent chiefly upon the relative intensity of the component waves. Speaking generally, a heated body gives off infra-red rays, these between  $400^{\circ}$  and  $500^{\circ}$  C. the red rays become visible or luminous. Then the light, as heat rises, verges towards the violet end of the spectrum, whilst the red, orange, and yellow rays become more intense. According to Dr. Draper, at about  $1100^{\circ}$  C., but varying with each body heated, violet rays are emitted, which, however, owing to their feeble intensity as compared with the middle rays of the spectrum, do not alter the colour of the light emitted. Phosphorescence, or "cold light," as it has been termed, is useless, or at least cannot be utilized at present.

Transparency, opacity and the conditions occasioning coloured media and the colour in the rays of light reflected from various surfaces are considered at some length. Dr. Gariel employs the word "*clarté*" in a special sense. Increase of illumination of a white surface has, he says, a double effect, first to increase the intensity of the light, clearness (*la clarté*), and, secondly, to increased sharpness of vision, this last result being the most important, since it is by it that we are better able to recognise objects. The light of the sun when playing directly on an object is equal, according to M. Fabry, to about 100,000 lux, the light at an open window commanding a considerable view of the sky is about 40 to 50 lux, and the variations with weather may be, according to Vogel, from 1 to 200. The illuminating powers of various forms of lamps are given, and comparisons are instituted between them in regard to the rays they emit.

The augmentation of temperature due to different modes of lighting is considered. Thus, taking a room having a capacity of 50 cubic metres, it is found that the rise of temperature, were there no loss of heat, would be for a bougie,  $51.5^{\circ}$  C.; for gas,  $39.3$ ; for oil,  $25.5$ ; for petrol,  $22.5$ ; for an incandescent lamp,  $2.6$ ; for an arc-lamp,  $1.3$ . The great advantage of the incandescent lamp in this respect is incontestable. The arc light is not used for near objects. The elimination of  $\text{CO}_2$  is of no small importance in judging of the relative value of modes of lighting. Thus, in the above-mentioned room of 50 cubic metres, bougies (wax) would yield 105 litres, petroleum 95, gas 88, oil 60, which in a room of this size would give, instead of the normal 0.004 per cent.: with bougies, 0.0021; with petroleum, 0.0019; with gas, 0.0017; and with oil, 0.0012 of  $\text{CO}_2$ ; whilst with the incandescent lamp the air is not spoiled at all. Seen with the incandescent light, and with arc light or with acetylene, objects appear of their natural colour. The mercurial arc is less becoming to the complexion.

It is due to the ultra-violet or more highly refrangible rays that the slight troubles and fatigue of the eyes are due; hence the action of the rays upon the retina should, as far as possible, be prevented or diminished. This may be accomplished either by glass globes surrounding the light, or by the use of

spectacles, in the latter case, made of glass either coloured blue, green, or yellow. The action of smoked glass is clearly to reduce the intensity of light, but with that, and in proportion to the density, the sharpness of vision.

According to Dr. Gariel, Fieuzal was the first Frenchman who proposed the use of yellow glasses to relieve those who suffered from weak eyes, when exposed to light reflected from walls and white roads, for the supposed exclusion of the violet and ultra-violet rays. His views were criticised and opposed by Javal and Napias, who gave reasons for yellow-tinted glass. (It may be remarked that this is in accordance with immemorial custom amongst the Chinese who use a peculiar brownish-yellow glass.) M. Lossouarn\* has recently (1909), made a series of researches on Fieuzal's yellow-tinted glasses characterized by the Nos. 1-7, the weakest of which, No. 1, slightly shorten the spectrum, whilst his deepest tint, No. 7, absorb all radiations, starting from green blue 5—508.

Esculine, obtained from the horse-chestnut, as it is fluorescent, when exposed to ultra-violet rays absorbs them, and Moupillard has endeavoured to utilise solutions of it to protect the eyes from their hurtful influence. The method he has adopted is to dissolve a certain quantity of esculine in a 5 per cent. solution of gelatine. This fluid is spread over a plate of glass in the proportion of 5 cubic centimetres over 100 square centimetres of glass. When dry, this layer of gelatine and esculine is covered with a plate of glass, or a lens if ametropia is present, and fixed with Canada balsam. The glasses thus prepared have a light-yellow appearance, reflect a bluish or fluorescent light, and can be shown by the quinine test to absorb all the ultra-violet rays. M. Victor Henri has employed gelatine picrated, which not only absorbs the ultra-violet rays, but also the blue and the violet. Smoked and blue glasses do not arrest the ultra-violet rays, and only lower the tone of the whole spectrum and are not therefore to be recommended except in cases where there is simple fatigue of the eyes. Blue glasses produce but little change in the colour of objects, and produce little effect in the sharpness of vision, but they do not arrest the ultra-violet rays. Green glasses do not appear to have any special properties. They do not appear to absorb the ultra-violet rays, or only to a very slight extent.

The advantages of the yellow glasses are - conservation of colours, luminosity, repose of the eye.

The points Dr. Gariel considers he has established, putting aside the economical aspect of the problem of lighting, are the following: lamps, acting by means of the vapour of mercury, cannot be used as illuminants except under very peculiar circumstances. Arc lights are well adapted for throat illumination, and for the lighting of large halls. They ought to be placed at a distance of several metres from the public eye. They should be invested by diffuse holophote globes to prevent the light being too intense. Some advantage will be gained by giving the globes a yellow colour. Arc lamps can be used in halls of moderate dimensions by directing and reflecting their light on a white ceiling. Incandescent lights can be employed in all cases. They constitute the best light for ordinary dwelling-rooms. Ampullæ of yellow glass are of advantage. In class-rooms, studios, and in workshops where delicate work is in course of execution, the minimum lighting should equal 15 lux. In cases of retinal hyperæsthesia, coloured glasses should be worn. For private work the light should come from the left, it should be

\* Lossouarn, "Des verres colorés." Thèse de Bordeaux, 1909. The depth of colour or tint is determined ingeniously by noting what strength of quinine solution is no longer rendered fluorescent after passing through the tinted glass.

evenly distributed, without any shade on the part where the work is done, and have a minimum value of 15 to 20 lux. An opaque screen should be interposed between the light and the eye.

HENRY POWER.

**A Practical Treatise on Ophthalmology.** By L. WEBSTER FOX, M.D., LL.D. With six coloured plates and 300 illustrations in text. New York and London: D. Appleton & Co. Price 25s. net. 1910.

It is impossible not to sympathise with an author who, at the present day, sets out to write a complete work on ophthalmology. The labour is immense, and criticism of the result is so very easy. Fox's *Treatise* is a large one of about 800 pages. In bulk it nearly equals Fuchs' *Text-Book*; it is handsomely bound and most clearly printed, with admirably spaced-out headings and sub-headings: the illustrations are numerous, although many of them are familiar. Of the six coloured plates four are diagrams; one contains six figures of the fundus, and one represents some externally visible diseases.

An excellent synoptical *Contents* is found at the beginning of the volume. The first and second chapters epitomise development and anatomy, and the third shortly indicates the points to be observed in an external examination of the eye. The chapter on diseases of the lids includes the operative treatment of deformities, and numerous operations are described. One feels impelled to remark that the descriptions are not always easy to follow.

The author states that acute suppurative dacryocystitis should be treated by slitting the canaliculus. We do not think this is always advisable, even when possible. The careful and well illustrated description of the Vienna method of excision of the sac will be found of value. The sub-chapter on "Bacteriology of the Conjunctiva," though making no pretence at completeness, would be improved by a plate showing the usual conjunctival organisms. The statement that "infection of the cornea by the pneumococcus is rare" ought not to stand unqualified. An excellent account is given of purulent conjunctivitis. It is difficult, however, to see how, among our working-class patients at least, the healthy eye in a case of unilateral ophthalmia neonatorum is to be protected successfully by a Buller's shield. In the matter of prophylaxis, the author recommends the real Credé method in all cases. When used therapeutically also, nitrate of silver holds the field against the organic silver salts.

A most remarkable point in the chapter on conjunctival diseases is the space—no less than six pages—devoted to pterygium and its treatment. "It constitutes" (in America presumably) "about 7 per cent. of all ocular affections."

A brief account of ionic therapy is included in the chapter on the cornea. Especially worthy of notice is the author's method of improving the vision in conical cornea by means of opaque slips, the details as to size, shape, and position being worked out by the patient himself.

Under "Iris and Ciliary Body" we find a full diagnostic table of conjunctivitis, iritis, and glaucoma.

One cannot agree with the statement (p. 308) that in thrombosis of the central retinal vein, "the veins are extremely thin," unless, indeed, "thin-walled" is intended. The author's personal investigation of 100 consecutive cases of hæmorrhagic retinitis deserves special notice, but it seems difficult to reconcile the percentage statements on pages 327 and 328 respectively. The conclusion is drawn "that 80 per cent. of retinal hæmorrhages occur in individuals suffering from temporary or permanent high arterial pressure, and that this excessive intravascular pressure is apparently the most frequent



*exciting* cause; moreover, that bleeding has proven of value, not only in reducing dangerously high tension, but in acting as a powerful stimulus to a speedy absorption of the clot."

Under "Visual Disturbance of Functional Origin" we find tests for malingering. There is a useful chapter on colour perception and colour blindness, in which the work of F. W. Edridge-Green receives recognition.

The chapter on cataract is well done and up-to-date without being too much burdened with detail. The same may be said of the handling of glaucoma. Henderson's ideas on pathogenesis, and the operations of Herbert and Lagrange, are included. Lagrange's operation is well illustrated. Cyclodialysis is described in detail. In dealing with sympathetic ophthalmia the author especially pins his faith, as regards internal treatment, to large doses of salicylate of sodium as recommended by Gifford.\* Excision of a panophthalmitic eye is preferable to the free-drainage method, which "*is not advisable*." The italics are the author's.

The very interesting chapter on localization of foreign bodies includes a description of the author's ingenious localizer. This consists of a kind of wire shield divided by cross wires into four irregular quadrants. After instillation of cocaine, the shield, which is properly shaped for the purpose, is fitted over the front of the eye. The position of the foreign body is determined by its distance from and relation to the quadrants of the shield when photographed temporally and antero-posteriorly.

In the account of "Ocular Manifestations of General Diseases" we note, in particular, the paragraph on the relation between dental affections and eye diseases.

The chapter on the "Pupil in Health and Disease" condenses a mass of information.

The chapters on "Refraction" and "Extra-Ocular Muscles" are written in a manner suitable for the practitioner of some experience in eye work rather than for the beginner. We would draw the author's attention to the slip of the pen with regard to decentering, found on page 669. That portion of the latter chapter which deals with muscle operations is, in our opinion, one of the least successful in the volume.

The book concludes with chapters on "General Operative Technic" and "Laboratory Technic." With regard to the former, the reviewer although he may be wrong, has only noticed one reference to it in the text of the book. Further, there is no mention in it of sterilization and general handling of eye instruments. This chapter might be extended, and reference made to it in the various chapters in which operative procedures are described. With regard to the latter, it seems a waste of valuable space to describe microscopes and microtomes to a senior student or practitioner.

Looking at the work as a whole, the reviewer feels that it has been the author's praiseworthy ambition to make the book very complete. He has succeeded in doing this, but at a certain sacrifice of clearness of exposition due to economy of words at various points, and at a sacrifice of detail in the accounts of some diseases. In a second edition it should not be difficult to remedy this without materially increasing the size of the volume, because repetitions, which occur here and there, can be avoided, and because it should be possible to curtail or to omit certain pages. In a second edition, too, the ambiguities, typographical errors, and small mistakes, which are almost unavoidable in the first edition of a large work, can be eliminated.

Finally, we would say that the book, although marred here and there

\* See THE OPHTHALMOSCOPE, April, 1910.



by ungrammatical constructions, which very few writers are able entirely to avoid, is written in an eminently readable style. ERNEST THOMSON.

**Notes on Operations in India for Hernia, Hydrocele, and Elephantiasis.** By MAJOR P. C. GABBETT.—**Notes on Cataract Extraction.** By MAJOR R. H. ELLIOT. Madras: Higginbotham and Co. 1910.

This little book by Major Gabbett, I.M.S., includes a chapter dealing with cataract extraction in natives of India from the pen of Major R. H. Elliot, I.M.S.

According to our author, a beginner should take no risks in a new district. To that end, the cataract must be mature and of a type that is readily removable; the eye must be free from dangerous complications, and show evidence of unimpaired retinal functions; and, lastly, the patient must be quiet and tractable. Here is what Major Elliot has to say about the last-named point.

"An operation which is easy in a quiet tractable man may be difficult, if not impossible, in one who is destitute of self-control. It is difficult for anyone who has not had some experience of natives to understand how hopelessly frightened such patients become. They shut up their intellects like an oyster does a shell, and no words of the operator or of his assistant can be got to reach them; they will do nothing they are told, for they do not hear what is said to them. Sense seems paralysed by fright. The young operator who starts on such a patient may be hopelessly discouraged, and he is certainly not likely to make a success of the operation. These patients can often be recognised beforehand. The surgeon who is not absolutely sure of his manipulative dexterity will do well to refuse such cases or else to operate on them after the administration of a liberal hypodermic dose of morphin. Many patients who are quite intractable when they first come on the table, will lie quiet and suffer the operation without a murmur if they receive a sharp slap on the cheek. The writer has saved many eyes by adopting this method."

As regards preparation for operation, the night before operation a drop of atropine is instilled into the eye, the temporal lashes on the upper lid are clipped, the neighbouring skin is carefully washed with "Synol" soap and boiled water, and after the conjunctival sac has been freely flushed with 1·4 per cent. saline lotion, the eye is occluded with a "trial" bandage. On the morning of operation, if all be well, the everted eyelids are flushed for two or three minutes with sublimate, 1:3,000. Cocaine, 4 per cent., is then instilled, four applications being made at intervals of two minutes. When the patient is on the table, the conjunctival sac is carefully swabbed out by means of sterilized cotton sponges mounted on sticks, while the assistant freely flushes the area with 1·4 per cent. saline solution. Retained Meibomian secretion is expressed by firmly squeezing the edges of the lids between finger and thumb. Dressings, swabs, bandages, and so forth are sterilized by steam. All solutions employed are boiled for three minutes and then allowed to cool. Instruments are boiled, and Major Elliot insists that boiling a cutting instrument does not blunt it at once, although frequent boiling does so. Mouth-guards are worn by surgeon and assistant. The author lays stress upon the necessity of drying the surgeon's hands well on a sterilized towel before commencing the operation.

With regard to the operation itself, for a beginner the common operation is recommended, and only at a later stage should intra-capsular expression be attempted. The first step is to cut out a central piece of capsule by means of Bowman's needle introduced into the eye at the temporal side of the limbus. Section, iridectomy, and expression of the cataract are carried out in the customary way. McKeown's irrigator is employed.

As to after-treatment, the so-called "open method" is out of place in a dust-laden land like India. It is only necessary to apply a bandage in such a way as to close the eye without pressure, and at the same time to exclude dust and light. Only when the section tends to gape should pressure be applied. When the eye is the seat of conjunctivitis, Elliot employs a shield,

with a layer of absorbent wool on its outer surface. Indeed, if a case has been treated for conjunctival catarrh for two or three months, Elliot waits no longer, but operates with a shield. He has not lost a single eye treated in this way. Argyrol is invaluable for controlling the minor inflammations of the conjunctiva to which an eye is liable after removal of cataract. Even in suppurative keratitis and iritis admirable results follow the use of a 25 per cent. solution of argyrol. Subconjunctival injections of normal saline are highly recommended by Elliot in the treatment of tritis, post-operative or otherwise, as well as for the purpose of dissolving retained cortical masses. When suppuration threatens, 1 cc. of sublimate (1 in 3,000) is injected beneath the conjunctiva daily for three or four days. Dionine, used early, is well spoken of as a measure for clearing up cortical remains.

In Madras after-cataract is treated by laceration with a couple of needles, and the results have been so good that Elliot is loath to abandon this method in favour of others. The "needling" is undertaken three weeks to a month after the expression of the cataract.

In cases of immature cataract Elliot is obtaining good results from the Jullundur operation. The latter, however, has two drawbacks. In the first place, it is too difficult an operation for anybody who has not been carefully trained in *technique*; and, secondly, it is, in Elliot's experience, less safe than the ordinary operation when dealing with mature cataract.

SYDNEY STEPHENSON.

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## CORRESPONDENCE.

[While THE OPHTHALMOSCOPE will at all times welcome correspondence from its readers, the Editor does not hold himself responsible for any views expressed in this column.]

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### A MODIFICATION OF THE METHOD OF PERFORMING ADVANCEMENT OF THE TENDON IN STRABISMUS.

*To the Editor of THE OPHTHALMOSCOPE.*

SIR.—In reference to Mr. J. Augustus Lee's article under the above heading, which appears in this month's issue of THE OPHTHALMOSCOPE, and your footnote thereto, I should like to point out to Mr. Lee, regarding the innovation which he claims of using "only one tendon suture," that as far back as the year 1887 I published a short article in the *British Medical Journal* on "A Simple Method of Advancement of the Internal Rectus in Squint," in which the single loop was one of the principal features. Also, that the late Dr. Argyll Robertson, at the Birmingham Meeting of the British Medical Association, read a paper on a series of cases operated on by him in which he also claimed priority in the use of the single suture in advancement of the recti muscles. At that time I felt it my duty to point out to Dr. Argyll Robertson that I had previously used the single suture in my method of advancement, and his courteous reply is to be found in a subsequent number of the *British Medical Journal*. Some years later (1894) I published a short article on the same subject in the *Ophthalmic Review*, and Mr. Lee will find an

account of my method in Mr. Grimsdale's book on *Ophthalmic Operations*. In view of these facts I have no doubt Mr. Lee will see that he can claim no priority in the use of the single suture, whatever other merits his plan may possess.

Yours very truly,

RICHARD WILLIAMS,

BANGOR,  
*April 8th, 1910.*

*Consulting Surgeon, Liverpool Eye and Ear Infirmary, etc.*

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## NOTES AND ECHOES.

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### Deaths.

By the death of George A. Carpenter, which took place with dramatic suddenness from cerebral hæmorrhage on Easter Day (March 27th) at the residence of his mother at Waddon, near Croydon, the medical profession has lost an admirable physician, the public a great authority on diseases of children, and his colleagues a friend whom it will be well-nigh impossible to replace.

Born on Christmas Day, 1859, Carpenter received his general education at Epsom College, Surrey, and King's College School, London, and his



DR. GEORGE A. CARPENTER.

professional education at St. Thomas' and at Guy's Hospital, London. His father was a well-known medical man, Dr. J. William Carpenter, who at one time enjoyed an extensive practice in the Kennington district. In 1886 George Carpenter took the degree of M.B. London, and proceeded to the

M.D. four years later, having obtained the Membership of the Royal College of Physicians of London during the preceding year. Early in his medical career he became known as a most acute clinical observer, a reputation he maintained until the last day of his life. The amount of trouble he would devote to the examination of a patient was extraordinary. His observations were the more valuable since he could use instruments of precision, such as the ophthalmoscope, with as much skill as any professed specialist. Indeed, although essentially a specialist in the diseases of children, yet Carpenter was a most accomplished all-round physician.

His attention was early directed to ophthalmology in its manifold bearings upon general medicine, and at the time of his demise he was a member of the Ophthalmological Society of the United Kingdom and of the French Ophthalmological Society. His several communications upon tuberculosis of the choroid, the last of which was read before the Ophthalmological Society of the United Kingdom as recently as May 6th last, attracted considerable attention from ophthalmic surgeons, both in this country and abroad. Many readers will recall the wonderful specimens of oxycephaly shown by him at the Ophthalmological Society in 1909, which are now in the museum of the Royal College of Surgeons of England. He was a frequent contributor to the columns of *THE OPHTHALMOSCOPE*. For many years Carpenter was physician to the Evelina Hospital, an institution of which in earlier days he had been the resident medical officer, pathologist, and registrar. Some few years ago he was appointed assistant physician to the Queen's Hospital for Children, where he speedily became full physician.

His published works included "Congenital Affections of the Heart," "Syphilis in Children," and "Golden Rules for Diseases of Children," to say nothing of a host of communications to the medical journals, both general and special. His work was characterised by truly Teutonic thoroughness and detail, at the perfecting of which he laboured with loving care. It will for long stand for a model of what such work should be. In 1903, Carpenter, who had formerly been English editor of the American journal, *Pediatrics*, founded the *British Journal of Children's Diseases*, which he continued to edit until the time of his death. His chief monument, however, is to be found in the *Reports of the Society for the Study of Disease in Children*, which he edited from their commencement in the year 1900 until 1908, when that Society amalgamated with the Royal Society of Medicine. The contents of these eight volumes bear testimony, not only to Carpenter's industry, energy, and devotion, but also to the zeal with which he pursued his chosen speciality, namely, the diseases of children.

George Carpenter was a man of many activities. He played no unimportant part in the deliberations of the committee on ophthalmia neonatorum of the British Medical Association, which reported in May, 1909, and he attended the meeting of the Association at Belfast later in the same year to endorse by word of mouth the recommendations of the committee in the discussion that then took place in the combined Sections of Ophthalmology and Obstetrics. In 1909, he delivered the Wightman Lecture, selecting as his subject "Congenital Affections of the Heart." At the time of his death he was Vice-President of the Royal Society of Medicine, and Chairman of the Council of the Section for the Study of Disease in Children. He was also a fellow of the Medical Society of London, and a corresponding member of the *Société de Pédiatrie de Paris*.

The funeral took place on March 31st, 1910, at All Saints' Church, Sanderstead, Surrey.

May George Carpenter's kind soul rest in peace.



The death is announced of Dr. J. H. Baas, of Worms.

Dr. Wm. A. Gordon, an eye, ear, nose, and throat specialist of Mountain View, California, died on January 28th, aged 75 years, from senile decay.

\* \* \* \*

THE congress season is hard upon us. The French Scientific Meetings. Society of Ophthalmology meets at Paris from May 2nd to May 5th. Secretary: Duboys de Lavigerie, 23, Rue de Madrid, Paris. The Oxford Ophthalmological Congress assembles at Keble College, Oxford, July 20th to July 22nd. Secretary: Sydney Stephenson, 33, Welbeck Street, London, W. The Heidelberg Congress assembles at Heidelberg from August 4th to August 6th. Secretary: Professor Wagenmann, Jena.

\* \* \* \*

Honours. Dr. v. PFLUCK, of Dresden, has been nominated by the King of Prussia as *Ehrenritter des Johanniterordens*.

The title of professor has been bestowed upon Dr. Pfalz, of Düsseldorf, Dr. Hans Landolt, of Strassburg, Dr. Salzer, of Munich, and Dr. Herzog, of Berlin.

\* \* \* \*

The Stockholm Appointment. SINCE Professor Gullstrand, of Upsala, has declined a call to succeed Professor Widmark in Stockholm, the appointment has been offered to, and accepted by, Professor Dalén, of Lund.

\* \* \* \*

Appointments. Mr. ROBERT LAWFORD KNAGGS, whose name is well known in connection with ophthalmology, has been appointed professor of surgery in the University of Leeds.

Mr. C. CONSTABLE HAYES has been appointed surgeon in charge of ophthalmic out-patients at the General Infirmary, Leeds.

Mr. GEORGE POTTS has been appointed honorary aural surgeon to the Kent County Ophthalmic Hospital at Maidstone.

Mr. EMRYS JONES has been appointed radiographer to the Midland Eye Hospital, Birmingham.

Dr. KARL BEHR has been recognized as *privat-dozent* of ophthalmology at Kiel.

\* \* \* \*

**Investigation into  
Trachoma.**

DR. LEBER, of Berlin, and Dr. v. Provazek, of Hamburg, will, at the end of May, go to Samoa for some months, in order to investigate a number of eye diseases, including trachoma. From Samoa they will travel to the island of Sumatra, where they will complete their investigations by experiments upon anthropoid apes.—*Wochenschrift für Therapie und Hygiene des Auges.*

\* \* \* \*

**Exclusive Dealing.**

THE Manchester opticians have recently been agitating an alleged grievance in that, under the present system, all of them, with a single exception, are precluded from filling prescriptions for such glasses as may be ordered for patients attending the Royal Eye Hospital. At a recent meeting of the Manchester and North of England Optical Society the matter was discussed. In the outcome a deputation was appointed to wait upon the Board of Management of the Hospital, and to present the question from the opticians' standpoint. From their point of view there is undoubtedly something to be said. The present system dates from a period when trustworthy opticians were few and far between, and some such exclusive arrangement had to be made in order to protect the patient against the consequences of his own credulity and of other persons' imposture. It was probably the only plan whereby the surgeons could be tolerably certain that their prescriptions would be executed correctly. Whether this exclusive dealing is desirable or necessary under more modern conditions is, of course, another and a wider question. There would seem to be no valid reason why such opticians as professed their willingness to conform to a certain standard as regards workmanship, materials, and price should not be given the chance of filling the Hospital prescriptions. The names and addresses of conformists could be given to Hospital patients, together with the prescriptions, and the patient could be allowed to choose from among the names that optician as appeared best suited to his purpose. Some precautions of this kind, however, would be absolutely necessary when dealing with the members of a trade the units of which differ so widely as that of the optical.

\* \* \* \*

**William Rowley's  
Treatise.**

IN a recent number of our contemporary the *Centralblatt für praktische Augenheilkunde*, Professor Hirschberg casts very serious doubts upon the originality of William Rowley's famous *Treatise on One Hundred and Eighteen Principal Diseases of the Eyes and Eyelids, etc.*, which was published in London in the year 1790.

By copious extracts the learned writer shows that Rowley's production is a word for word translation of Josephi Jacobi Plenck's "*Doctrina de Morbia oculorum*," published in Vienna in the year 1777.

\* \* \* \*

APPENDED to Rowley's *Treatise*, by the way, is a quaint **Franklinic Spectacles.** letter not devoid of interest at the present time, when bifocals or kryptok glasses enjoy so large a share of public favour. The superscription of the letter runs as follows:—*A species of spectacles has been recommended by the late Dr. Benjamin Franklin, in a letter to my worthy friend, George Whateley, Esq., Treasurer to the Foundling Hospital. The following is an extract from Dr. Franklin's letter :*

"By Mr. — saying that my double spectacles can only serve particular eyes, I doubt he has not been rightly informed of their construction. I imagine it will be found pretty generally true that the same convexity of glass through which a man sees clearest and best, at the distance proper for reading, is not the best for greater distances. I, therefore, had formerly two pairs of spectacles which I shifted occasionally, as in travelling I sometimes read, and often wanted to regard the prospects. Finding the change troublesome, and not always sufficiently ready, I had the glasses cut and half of each kind associated in the same circle.

"By this means, as I wear my spectacles constantly, I have only to move my eyes up or down as I want to see distinctly, far or near, the proper glasses being always ready. This I find more particularly convenient since my being in France, the glasses that serve me best at table to see what I eat not being the best to see the faces of those on the other side of the table who speak to me; and when one's ears are not well accustomed to the sounds of a language, a sight of the movements in the features of him that speaks helps to explain, so that I understand French better by the help of my spectacles."

\* \* \* \*

THE following manifesto to clinical teachers has been  
University of Oxford : issued by the Reader in Ophthalmology in the University  
Department of Ophthalmology. of Oxford :—

"In connection with the Diploma in Ophthalmology, there is now arranged a course of instruction to take place annually during the summer term in the Departments of Anatomy, Physiology, and Ophthalmology. But, apart from this, it is the desire of the Department of Ophthalmology to develop during this term a course of systematic instruction that shall be the best of its kind. It is hoped that before long a suitable fabric may be endowed and fitted with all the apparatus pertaining to ophthalmology, for private study as well as systematic teaching.

"The Department does not propose to deal with clinical teaching ; that is excellently done in various centres throughout the country, but it is hoped that the value of a place fitted with all apparatus and appliances for systematic teaching and study will be recognised as a valuable adjunct to what is, of course, the more important consideration, that of clinical work.

"Now such a scheme cannot possibly succeed unless it receives the active support of the clinical teachers of this country, and it is the desire of the Department to organise the generous support they may be disposed to give, and more especially by way of lectures. Advice and criticism, adverse as well as favourable, will be welcome, for it is the desire of the Department to systematise and support the English School of Ophthalmology and in no sense to enter into competition with any of the excellent work that is being done."

\* \* \* \*

AN interesting section dealing with secret remedies for Quack Eye Remedies. diseases of the eye will be found in the recent publication on quack medicines by the *British Medical Journal*.\*

"Singleton's eye ointment," "Bostock's eye ointment," "A new and marvellous remedy for the eyes," "Pomies' anti-cataract mixture," "Okterin," "Ophthalmol," and "Augenwol" are described in the light afforded by recent analyses. Singleton's eye ointment is charged at the rate of 2s. for a pot containing about 55 grains, the contents of which are estimated to be worth about one-ninth of a penny, despite the proprietors' assurance that the substance is composed of costly ingredients. Its chief ingredient is red mercuric oxide (7.4 per cent.), mixed with a fatty base. Bostock's eye ointment, half an ounce of which costs the public 1s. 1½d., appears to consist of ammoniated mercury and oxide of lead, along with a little glycerine, a bitter light-coloured substance of the nature of an extract, and an ointment basis of soft paraffin, spermaceti, and lard. The estimated cost of ingredients for half an ounce is under one halfpenny. The "new and marvellous remedy for the eyes," which emanates from Wisbech, is a coarse pink powder, shown by analysis to contain: basic aluminium sulphate, 48.2 per cent.; anhydrous sodium sulphate, 18.3 per cent.; colouring matter, a trace. A packet which contains 135 grains costs the public 2s. 9d. and the proprietor one-twentieth of a penny. Pomies' anti-cataract mixture is retailed at the price of 2s. 6d. for a pot containing 162 grains, the estimated cost of which is one-third of a penny. Analysis shows the composition of the substance to be: potassium iodide, 5.6 per cent.; glycerine, 56.5 per cent.; starch, 6.4 per cent.; water, 31.5 per cent. "Okterin" is a sulphate water, apparently pumped out of a mine which contains ochre. "Ophthalmol" is supposed to be made from the glands of a fish. It yielded analytical data which appeared to prove that it was rancid olive oil, with 6 per cent. or 7 per cent. of a mineral oil like paraffin. "Augenwol," said to be made from many plants obtained from many countries, proved under analysis to be a coloured perfumed solution of common salt, containing a little glycerine and some extractive substances.

\* \* \* \*

#### A Claim in Respect of Nystagmus.

IN a case recently heard at Sheffield it appeared that the applicant had been working below ground for about ten years. He then had to leave the pit, owing to a disease of the eyes, and was subsequently sent to hospital. After three months he returned to the pit, where he worked for about eight months,

\**Secret Remedies, what they cost and what they contain.* London: British Medical Association, 429, Strand, W.C., 1909.



and then again had to leave, as the complaint returned. Compensation was paid for about nine months, when the employers stopped it, as they thought the applicant could return to work. Mr. Constable Hayes, of Leeds, giving evidence for the applicant, said that if he went back to work the nystagmus from which he was suffering would become much worse, and in a few months he would be wholly incapable. According to his experience, in 50 per cent. of the men who had had the complaint there was a recurrence after the first attack. Dr. J. Broadly, who was called on behalf of the employers, said that when he examined Vickers he perceived no movement of the eyes, and thought he was fit to resume work in the mine. If the disease were allowed to go on it would become chronic, but by that time the patient might not be inconvenienced by the movement of the eyes, and might be able to do his work quite well. He admitted, however, that constant work in the mine would probably make the disease chronic. Eventually an award of 10s. a week was made on the footing that the applicant was capable of doing the work of an ordinary labourer at 20s. a week.—*British Medical Journal*, March 26th, 1910.

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[TWO SHILLINGS.

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## ORIGINAL COMMUNICATIONS.

### SMITH'S CATARACT OPERATION.

Impressions Gleaned during a Recent Visit to "Jullundur Smith's"  
Clinic, Punjab, India.

BY

DERRICK T. VAIL, M.D.,

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OPHTHALMOLOGIST TO CINCINNATI (MUNICIPAL) HOSPITAL, CLINICAL PROFESSOR OF  
OPHTHALMOLOGY, MEDICAL DEPARTMENT, UNIVERSITY OF CINCINNATI, ETC.

I SPENT six weeks at Jullundur City, Punjab, India, last fall, *viz.*, from September 27th to November 10th, 1909, working in Major Smith's clinic, which ran daily in the Victoria Memorial Hospital there. Major Henry Smith, I.M.S., was "civil surgeon" of Jullundur District at that time and had been working continuously as civil surgeon at Jullundur for over ten years past. He has since been appointed civil surgeon to Amritsar District, a post made vacant by the death of Mulronez. Amritsar is located in the Punjab, about 50 miles north-west of Jullundur City, and is the third largest city of the Punjab, with a population of about three times that of Jullundur.

A number of ophthalmic surgeons were there during a part of my stay bent on the same mission that took me, namely, to study Smith's operation for cataract first hand. Three of us were Americans—Greene, of Dayton, Ohio; Clarke, of Columbus, Ohio; and myself. Two were I.M.S. men, Birdwood, of Agra, and Elliot, of Madras.

I witnessed in all about one thousand successful extractions in the capsule, not counting about one hundred and fifty attempted extractions in the capsule, among which the capsules burst during delivery from one cause or another. In no instance was the cystitome or capsulitome used.

There is a great wealth of cataract material in the Punjab, where the country is "open" and the reflected sunlight from the dry and dusty plains is constant, insistent, and merciless. Smith's fame as a cataract operator has spread by word of mouth among the millions of illiterate natives of Northern India for a radius of 500 or 800 miles from Jullundur, and during the cataract season there is a constant stream of blind people coming by every mode of travel to his clinic.

The fall season runs from October 1st to December 1st, when the cold nights set in, and during these two months there is an average of twenty-five cataract operations daily, including Sundays, or about 1,500 cases for this, the busy cataract season of the year (October and November). The spring season, March and April, will yield 1,000 more, and other months, perhaps, 500 in addition. Thus, there is an average of 3,000 extractions at Smith's clinic within the year. This has been going on with some fluctuations for over ten years, so that now he has to his credit upwards of 24,000 cataract extractions. About 3,000 (estimated) of his first cases were extractions by the capsulotomy method. About 20,000 of his cases in round numbers have been done in the capsule, and about 1,000 (estimated roughly) were on juveniles and congenitals. He has thus had abundant experience, and has a record which entitles him to be heard on the subject of cataract extraction. If he has anything good to offer as the result of his vast experience as an investigator of the various methods of cataract extracting, the profession should not judge adversely or condemn out-of-mouth without a fair investigation.

Since Smith first began extacting cataracts in their capsules, he has made many improvements and modifications in *technique*. These alterations were all introduced in his practice after careful investigation and repeated experiments, so that the development of his present *technique* is the result of his experience among many thousand cases, and the present operation is a matter of evolution. He says there can be little added or taken away from his present *technique*, which he thinks is now perfected, and which he has practised with no alteration for the last two years. We who have from twenty-five to two hundred cataract operations to do in a year's time could not with our limited amount of material work up anything like a perfected *technique* in a radically new cataract procedure, for each point has to be tried hundreds of times on cases of all kinds. The development would be too slow, the early disappointment too great, the opposition too strong, and the work would have to be abandoned. Smith worked alone and strongly opposed all these years, but he had faith in the underlying principles and confidence in his own ability to master the difficulties and perfect a *technique* that would be a contribution to cataract surgery.

His operation is far from being accepted at the present time. In America there is a willingness to examine into its merits and to give it a fair trial. At present there is a division of opinion with the preponderance in opposition to it. Some of this opposition comes from sources of unquestioned ability and carries great weight. Much of it is merely speculative. Many opinions are based on the experience a few cases have afforded, cases that were extracted in the capsule by a *technique* not Smith's at any point. Some of the opposition in our country comes from men who have judged the operation from a few exhibition operations done in a strange environment with assistants unfamiliar with their work and the operator at a great disadvantage.

Smith's operation is a new departure in cataract surgery. It is asking a great deal of an experienced cataract surgeon to abandon all his methods of operating and adopt an entirely different *technique* simply because a stranger in a far-off land insists. Operators naturally think that their own methods of making the incision, controlling the eyelids and eyeball, doing the iridectomy and replacing the iris are adequate, which, indeed, they are for the ordinary operation. The proper way to approach the subject is to first determine whether it is better to remove the cataract in its capsule or to leave the capsule behind, and if it is conceded that the capsule left behind is often a source of trouble and disaster, then to determine whether removal in its capsule is a safe operation and a successful procedure in large numbers. Personally, I am of the opinion that the capsule and the lens matter left behind are prejudicial to uniform success. The only point to argue, then, is, can the lens in its capsule be extracted *in toto* with as good as or better result than by extracting the nucleus and a part or all of the cortex, leaving the capsule behind. This is a great question and is the rock upon which opinions of the best men in the world split. Smith, backed up by an experience of over 20,000 extractions, says his is a better and a safer operation than the capsulotomy. The world at large, with a meagre experience with his method, says it is not. Time will decide this mooted question.

I first felt the desire to investigate this question five years ago while listening to an address by H. Knapp, before the American Academy of Ophthalmology and Oto-laryngology at St. Claire, Michigan, when he said, while speaking on the management of after-cataract and the troublesome reactions following cataract extraction by the established method, "If I were a younger man I would make a trip to India and investigate Smith's operation



of extraction of cataract in its capsule to see if it is successful, for extraction in the capsule is the ideal operation if it can be done with safety." In the twenty years' experience I had had with cataract extraction, I cannot say I was displeased or dissatisfied with my results. The visual results were usually good, and I had never met with any disaster following discussion. What I wanted particularly to find out was, can *immature* cataract be removed by Smith's method? If so, I felt that I was not giving my patients, affected with immature cataracts, the best advice when I told them they would have to wait until their cataracts became "ripe" before an operation could be done with a fair promise of success.

I therefore went to India as a student in search of the truth. I was neither in favour of, nor opposed to, Smith or his operation. I went with an inquiring mind. I had read Smith's articles and was familiar with his claims. I was willing to be convinced, not by argument, but by actual observation and experience, and I told Major Smith that I reserved the right to draw my own conclusions from what I actually saw, and that if his operation was not a good one, I retained the right to say so. His answer to this was at least tactful, for he said, "I want you not to consider me or feel under any obligations to me personally; if you find the operation is not good, I want you to say so."

I witnessed 99 extractions before I undertook any on my own account, keeping careful notes on all I saw. I then began operating on my own account and did in all 350 extractions with Smith standing by offering suggestions from time to time. Smith's trained assistant held the eyelids for me, which contributed no small amount to my success. Among the first 46 I did there was not a single vitreous loss! Among the first 100 I did there were four cases which lost a small amount of vitreous: in none of these was there more than a mere drop lost. In my last 250 cases there were but three more, making in all seven cases of vitreous loss in 350 extractions. This is 2 per cent. The cases were all simple senile ones, presenting all degrees of ripening from immature cases to Morgagnian. A few were couched lenses; none of them was complicated with *plus* or *minus* tension. The most difficult cataracts to remove are the old cataracts of five, ten, or fifteen years standing in persons about forty years of age, where the lenses are completely cataractous, but very thin, the pupils small but active, and the chamber is deep. Smith did most of these. They will give vitreous loss in about 50 per cent. of cases, and the fact that Smith usually "took these over" accounts for my remarkably low percentage of vitreous loss. There were days when a series of from twenty-five to fifty cataracts were removed in the capsule without a single mishap, and other days when things did not come off so smoothly. I tried to determine why these "off" days came and was unable to find a cause. It may be that the good cases and the bad ones happened to come in bunches in conformity with the old saying that "birds of a feather flock together," but certain it is that cases would come in for operation one after the other on certain days, fortunately not often, which furnished us with every kind of complication. All at once the troubles would cease, a run of "smooth" cases would come and forty or fifty would be done consecutively without an untoward incident worth mentioning. Thus I wavered between complete faith in Smith's operation as the easiest, safest and best operation for all kinds of senile cataracts, from incipient to Morgagnian, to grave doubts as to its being a good operation for all cases. The final summing up of my rich experience with about 1,200 extractions was this: "For the people of India there can be no doubt whatever—Smith's operation is the best one for senile cataract."

It remains to be seen how it will do in American practice. I am performing the operation at present on all kinds of senile cataract and shall publish a full

report of them as soon as I have completed a series sufficiently large to prove anything.

Smith's operation is a definite routine procedure. I saw hundreds of extractions performed one after the other with the same precision of *technique*. The last one of the 1,200 I saw was like the first. There is no hesitation or doubt as to what to do at any stage; the assistant knows what to do and is never given a word of command: the operator makes the same identical set of moves in each and every case; the *technique* is never varied. The operation moves along like clock-work; the operator is never taken by surprise during delivery; he holds the emergency instrument (the lens spoon) in his left hand close to the eye ready for use any moment. In over 50 per cent. of the cases the actual operation is but the work of a single minute; rarely two minutes will be consumed in completing the operation itself. No request is made to the patient. The whole procedure in Smith's hands is a series of trained movements done by "second nature," like a man writing his own signature. Any operator who will undertake to extract cataract in the capsule without a complete knowledge of the principles as taught and practised by Smith, will do no two alike; he will vary his *technique* in every case; he will have no preconceived definite ideas and the assistant will not know what the operator will do next. The instruments used in the ordinary operation are totally unfit for extraction in the capsule, and the operator will be at a disadvantage because of this fact. Disaster, ugly results, and high percentage of vitreous loss will be the inevitable result, no matter how eminent or skilful the operator may be.

The strongest opponents to Smith's operation are those who have never seen Smith or his operation. They have attempted extractions in the capsule in their own way and without a thorough knowledge of the principles as worked out by Smith on thousands of cases. Such operations are to be likened to a play on the stage where the stage-setting has not been pre-arranged and the actors do not know their lines. The whole performance becomes a miserable botch. The actors may have the greatest ability, but if they are not perfectly familiar with their lines the drama becomes worse than a burlesque. In the case of cataract in the capsule, the operation becomes a tragedy if the operator, assistant, nurses, and all are not thoroughly well informed and practised beforehand to know exactly every move to be made and the principles underlying the operation at every stage. Principles are as necessary to guide us in our daily conduct as that we should breathe in order to live. Every operation in surgery is done in conformity to certain known and recognized surgical principles; as an instance, the general surgeon will not amputate a member of the body until after a tourniquet has been properly applied; this is one of his principles. His assistants will know what to do; the nurse will have everything prepared, so that all the principles can be rapidly executed. And so it is with Smith's operation. The principles are inviolable and necessary to success. I shall not for want of time and space be able to describe all the features of *technique*. I shall, however, mention a few of the cardinal points. It is necessary to know them and to become expert in practising them. They are:

(1) An assistant trained to hold the eyelids and brow in a certain way in all cases.

(2) The incision must be large and made in the cornea.

(3) The brow of the patient must be under control of the operator or assistant throughout the entire operation.

(4) The upper lid must be paralyzed by being properly held on a lid-hook during the delivery of the lens.

(5) The lens spoon must be held in the left hand close to the wound, ready for emergency use.

(6) The slightest show of vitreous calls for insertion of the lens spoon, which is used not as a traction instrument, but to hold the vitreous back and to afford a sliding surface for the lens to glide out on and incidentally to take the pressure off the vitreous.

(7) The delivery is effected by external pressure (not rubbing) by means of the bulbous end of the Smith hook applied against the cornea at one spot, *viz.*, midway between the pupil margin and lower border of the cornea, pressure being made boldly straight back toward the optic nerve and shifted to favor the exit of the lens.

(8) The cornea must be tucked behind the new-born lens before the lens is wiped aside.

(9) The iris is replaced while the upper lid is still held on the lid hook.

(10) Smith's instruments must be used.

My belief as to the place this operation now occupies as a surgical procedure is as follows: It is to-day the best operation to consider in cases of immature cataract and fortunately is usually easy to perform in such cases. The operation is totally unfit for congenital and juvenile cataracts.

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## THE EXPRESSION OF THE LENS WHOLE IN ITS CAPSULE IN CATARACT EXTRACTION.

BY

GEORGE H. FINK.

MAJOR I.M.S. (RETIRED).

I FEEL sure that the experience of all those operators in cataract extractions by the particular methods each adopts is worthy of record. I therefore desire once more to bring forward certain points of interest in the operation for cataract, details of which I published some years ago in my book.\* Having performed over 1000 cataract extractions, I may be excused for bringing forward the points without in any way being charged with suggesting a method superior to others. The results of many operators are, I am aware, superior to mine. But at the same time, I do not consider that the *technique* long ago employed by me in which I had 96.6 per cent. successes in my 500 cases (the first series I undertook) can be said to have been unfavourable in those days, nor can it be regarded as very different in essentials from those employed in recent years.

There are certain points of great interest mentioned in the *Indian Medical Gazette* for last January. Major G. T. Birdwood's advocacy of "Smith's operation of extraction of the lens in its capsule" is of much interest to me, because I am one of those to whom he refers when he says on p. 9 of his article, "other operators before Smith have removed the lens in its capsule, but Smith has, in my opinion, introduced many points of new *technique* which combine together to form a new operation."

I had the pleasure of meeting the gentleman he refers to and talking over the subject of my operation for cataract—which those also have read would

\* *Methods of Operating for Cataract and Secondary Impairments of Vision*. London: J. & A. Churchill, 1894.



regard also as being done by a particular *technique* from start to finish—while I was for a short time working at the Native General Hospital at New Shera and officiating for a few days as Principal Medical Officer as well. Later, I have met him in London within the last few years, and our conversation turned back once again to the days of our doings in India.

I always found the eclectic method of operation for cataract the more suitable one in the old N. W. Poonah (now the United Provinces of Agra and Oudh), as the special urgency of the case demanded.

It is my endeavour to justify my *technique* between the years 1888-94 without in any way depreciating that which Smith adopts, which, in its essentials before and during the operation, though somewhat different, yet, is in many respects similar in the matter of avoiding some of the pitfalls in so delicate an operation. I do this for the simple reason that I might show that an operator in comparing a series of his cases in statistical form, would naturally be able to produce better results each time he published a fresh series, for if he adopts a particular *technique*, the delicacy of touch and the muscular sense employed in so delicate an operation as cataract improve and become more and more sensitive and better educated.

I notice that Major Birdwood has performed a very considerable number of extractions of the lens. He says: "In 1904 and 1905 I performed 849 capsulotomy operations, and in 1908 and 1909 I did 736 with good results in 90 per cent." Major Birdwood informs us that the number of cases of escape of vitreous was as large as 35 per cent. in a series of 311 cases done by him before he learnt Smith's *technique*. Even on learning the *technique* from watching Major Smith, he gives 11·3 per cent. as his figures. In 35 cases, he had four escapes of vitreous. He commends the operation as done by Smith, showing that "in the hands of the surgeon who is continually operating for cataract (as many Civil Surgeons are) ought to be able to do the operation with a less than 10 per cent. escapes of vitreous. The good operator or specialist would get less than 5 per cent. vitreous escapes and 97 per cent. to 98 per cent. successful results with good and useful eyes."

In the series of cases published on pp. 34-35 of my book, I had in the 500 cases 0·9 per cent. escape of vitreous in 304 cases of single operation, and 2·5 per cent. escapes of vitreous in 196 double operations for cataract. Total escapes of vitreous per cent. = 1·6 per cent.

But there are other complications in cataract operations mentioned in my cases besides the escape of vitreous, and such are (i) slight prolapse of iris, (ii) large prolapse of iris, and (iii) cortex retained. These three gave as a total 9·8 per cent., but, nevertheless, *useful* eyes, so far as mere power of vision was concerned, although not perfect vision. (iv) Suppuration in this series gave 8·8 per cent. altogether, but only 2·6 per cent. in the single operations. The single operation certainly weighed in favour of the double and I advocate it in preference *most certainly* for my successes so far as "good and useful eyes" went, were 96·6 per cent. in this series. Neave pointed out below my table in page 35, the fact also that in the single operation in 8 cases no untoward symptoms set in as the result of this accident. I am therefore a firm believer with Major Birdwood in the particular *technique* of a cataract extraction, and I think that the *technique* mentioned by me in my work is one I should certainly follow always and hope for better results in each series of 500 operations, particularly as, in my first series, the successes I had, were so highly encouraging as compared with the published results Major Birdwood has given of his own cases, and those, which one would expect in the hands of the good operator and specialist. I think that the method adopted by such operator to suit his own taste in the matter of detail is insignificant in



the matter of results so long as the essentials are safeguarded. These essentials as regards my operations are:—

(i) The instruments and dressings mentioned on pp. 9-11 of my book, which "Smith's operation in detail," as given by Birdwood on p. 9 of the *I.M. Gazette*, mentions under (2).

(ii) The patient and operator, given by me on detail in pp. 11-26 of my book, and by Smith's method under, see 1-6.

(A) A point of great importance which Smith believes in, is the avoidance of pressure on the eyeball, and which I have insisted on most firmly on pp. 13-14 of my work, where I give a diagram of Bowman's speculum and my own, and show the advantages of both as well as their attachment at the inner canthus of the eye of the patient for this reason.

(B) The next point is the careful cleansing of the eye and the folds of the conjunctiva, both before, during, and after the operation. This I mention on p. 12 of my book with a diagram of the irrigator, and on pp. 23 and 24, and at the same time mention a particular way of everting the upper lid and turning it upwards towards the brow, and with the left index finger upon the centre of the palpebral conjunctiva (previously cocaineised), fix the lid against the orbit to widen the palpebral fissure.

(C) The question of iridectomy is also considered by me on pp. 18-21.

(D) As to whether capsulotomy should be done or not seems to me the point now. Smith advocates the operation without capsulotomy. It is a point doubtless of very great importance in some cases. If my work be read, it will be observed that there are reasons, in a certain percentage of cases, where its advocacy is correct. But I disclaim such a method in all cases without special or particular reasons. Will the results by the eclectic method in a series of cases (such as in my 500), give as good results as those mentioned by Birdwood in the matter of *escape of the vitreous*, which seemed the *particular thing* upon which much stress was laid. I have given the number of escapes of vitreous in my series of operations by the eclectic method, and, I consider they are, if anything, less than those mentioned, and to be considered good results in the hands of a good operator. If a cataract be fluid or of soft cortical substance, I maintain, that it may be easily extracted without lacerating the capsule; but, as I have pointed out in my work, "There are exceptional cases, where I have extracted nuclear, striated and black cataracts without pricking the capsule. It is always worth while trying to do so without lacerating the capsule, and if it comes away easily, well and good; if not, you prick it with the cystitome." Note I have said "*easily*."

(E) I have also given the special indications which are essential for the performance of iridectomy when adopting the method by "laceration at the periphery of the capsule," the immediate effect of which, when done *secundum artem*, is an "increased dilatation of the pupil," which gives an easy exit to the lens without doing an iridectomy. The why and wherefore this effect, be the result what it may of such a procedure, I do not venture to explain; but it has invariably occurred in my hands in hundreds of cases. Further, I have pointed out, that "the chief object is to have a pupil perfect, which responds to light in the act of accommodation far more advantageously than a pupil with iridectomy." The unmutated pupil is the better.

(F) Now, as to his last stage of the operation, the points are mentioned clearly on pp. 22-25 (4), which I would ask the reader to consult in full detail. In this stage of the operation, whereas Smith employs an assistant to draw forward the upper lid with a stout strabismus hook, vertically, and with the middle, ring, and small finger of the same hand to draw the eyebrow forcibly up, I do not employ an assistant for any of these purposes, but, as I have said

before, use special methods to prevent pressure upon the eyeball, and no sooner has the incision been completed, remove the speculum and increase the size of the palpebral fissure, keeping my left index finger upon the everted lid in the centre, and fix it (the upper lid against the orbit). Then, by applying the strabismus hook to the lower lid as described on p. 24 of my book with the right hand, "pressure is applied by a sliding motion, gentle and yet firm, upwards and backwards against the eyeball below the cornea." Then, having described the object of this and the manner in which the lens presents and is brought away through the wound, I say, "No sooner it (the lens) has gained an exit, the upper lid is released, and the effect of this is that the lens drops with a slide over the anterior surface of the cornea on to the cheek of the patient." (p. 24). This is very similar to the lenses described by Major Smith as "tumblers" on page 10 of Major Birdwood's article.

The great feature therefore of Smith's operation is removing the lens *whole in its capsule* and producing good and *useful* vision. This is a measure undertaken by me, as I have said before, and with a nicety and precision, and in some case, for a special purpose in view; but with certain precautions, in order to avoid a secondary impairment of vision. I say *certain* precautions, and think my eclectic methods justify my saying so, because my cases showed less escapes of vitreous by adopting my *technique*, for if in these cases certain precautions as I have mentioned be taken, the escapes of vitreous would be less, and that they were less can be seen from the results I have already published, which are considerably below 5 per cent., and enormously under 10 per cent., which Major Birdwood considers as about the *acme* of good operating.

I have given the chief reasons for advocating the extraction of the lens in its capsule, when this is justified, and when is not, and the very particular reason is that mentioned in Part II of my *brochure*, read before the Ophthalmological Section of the Indian Medical Congress, at Calcutta, in 1894. I would repeat the same, but it is a long matter, and would occupy several pages. I would ask my readers, therefore, kindly to consult this part of my work. It will be found in  $1\frac{1}{2}$ -2 per cent. cases, that after a most successful operation for extraction of the lens yet there remained, notwithstanding the splendid black pupillary area, *something* which interfered with the patient's vision. This was found by my testing the vision immediately after the operation by putting up my fingers before his or her eyes to count, but they could not be counted. On further examination, a deep haziness resembling a *cob-web-like* structure could be seen deep down in the centre of the pupillary area, which was not the posterior capsule of the lens, for that had been removed with the lens while in its capsule. Hence, it was nothing but the hyaloid membrane, which, through pressure of a hard lens against it, had undergone certain changes, through pressure and loss of nutrition, creating a haziness resembling a cobweb-like structure, which by the gentle application of the curette to the centre, and a slight laceration, was immediately released, as it were, and created an instant effect, for the patient then said no sooner this were done, that he again *could see*. In such cases there is every likelihood of a discharge of vitreous occurring, and this depends upon whether the posterior capsule is firmly agglutinated to the hyaloid membrane or not. If agglutinated, naturally when the lens and its capsule are brought away entire, the hyaloid is pulled open and torn through during that particular stage when the lens while in its capsule is operated upon: but in some cases it comes away easily, and there is

very little escape indeed, and this is never to be feared after the lens has come away; but before it comes away, if there be a discharge, it is to be feared for obvious reasons. It is in these latter cases that the idea suggests itself of a firm agglutination of the posterior capsule to the hyaloid membrane which is forcibly dragged open, ruptures, and lets out the vitreous with a sudden gush, when panophthalmitis and other complications might set in. Hence, I consider, for these reasons, that eclectic methods are more scientific than the extraction of the lens whole in its capsule at all times, and regardless of the discharge of vitreous either before or after the delivery of the lens.

Is it worth while, then, in all cases to extract a lens in its capsule, and thereby to run serious risks? I think not, for the reasons given. The escape of vitreous is not to be lightly regarded in some eyes, especially in the elongated form of eyeball. It is a condition worth avoiding for the very reasons mentioned, and, if avoidable, why not avoided?

I do not think I have failed to mention all the points in the *technique* of my operation for cataract extraction, either *with* or *without* capsulotomy; but the points I have stated which contraindicate the extraction of the lens in its capsule, are, I feel, worthy of the highest consideration, and should be avoided if possible; and that surgeon is the most dexterous who, ere he lift his cataract knife, carefully considers the condition of the eye to be operated upon, and the *pros* and *cons* of the case. I have found great advantage—which the figures given above shew—in the eclectic method of operating, and the particular *technique* employed by me, and I feel I have the advantage by the eclectic method, and no disadvantage whatever in the matter of results by the methods advocated elsewhere.

In bringing forward once more the second point in Part II of my *brochure*, I need hardly point out, as I have done before at the meeting in Calcutta, and again in the *Journal of Imperial Medicine and Hygiene*, that after an operator had done his thousand cases of cataract extraction, he was fully able to say whether his operations for the central haziness, as described above and operated on, was in *mature* or *immature* cases of cataract. It does not necessarily follow that because an operator in Bengal, who has done a hundred cases of cataract extraction, is not able to find this condition, which another in the Bijua district and Benares in the N. W. P. and Oudh has found in a series of one thousand cases, that the latter has been operating on immature cataracts and producing 96·6 per cent. results as to good and useful vision. Such beneficial results as I have described with regard to these cases, are only to be witnessed in the straightforward lens extraction of *mature* cataracts; but would wholly defeat the good results in immature cases, and more especially when I have said "Very, very seldom has it fallen to my lot to perform the secondary operations for cataract." I have claimed for this particular method and *technique* the same great advantage as the modern operation of litholapaxy has over lithotrity, *i.e.*, it is far better to remove the disability at one sitting than to wait weeks and months after the operation for linear extraction has been done.

I therefore now leave myself in the hands of those who are the best judges.

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Right Eye.



Fig. 1.

Left Eye.



Fig. 2.

Left Eye.

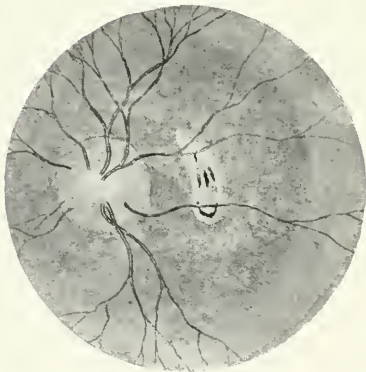


Fig. 3

Right Eye.



Fig. 4.

Right Eye.

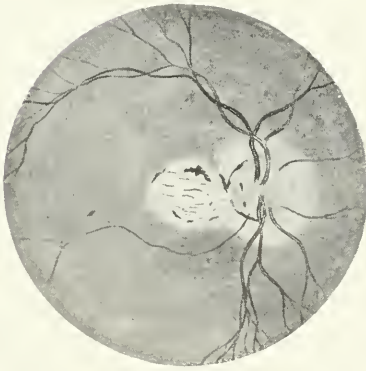


Fig. 5.

Left Eye.



Fig. 6.

## A CLINICAL STUDY OF OBSOLESCENT TUBERCULOUS CHOROIDITIS OF THE MACULAR REGION IN CHILDREN.

BY

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THIS condition has received little notice at the hands of ophthalmologists in general; none of the regular text-books at my disposal allude to it, even that edited by Axenfeld, which has just appeared, makes no mention of the disease. Groenouw, who writes the article on tuberculosis of the choroid in the latest edition of the *Graefe-Saemisch Handbuch* does not apparently recognise that tuberculosis of the macular region in children may assume a chronic and benign form. And yet obsolescent tubercle of the posterior pole cannot be very rare, for during the past three years at least eight examples have come under my notice among the 5,000 new patients whom I have seen at my clinic at the Coventry Hospital and elsewhere.

Sydney Stephenson and George Carpenter, in a paper read on June 29th, 1901, before the Society for the Study of Disease in Children,\* carefully described the condition, and showed a drawing of a typical case, very similar to my Fig. 1. They stated that they had notes of 16 such cases. In the discussion which followed Dr. A. E. Sansom stated that he was convinced that tuberculous disease in the choroid in children could pass into an obsolescent condition. The reason that this not infrequent malady has received such scant recognition would appear to be that in the past tuberculosis of the choroid, especially in children, has been regarded as a progressive disease, and one associated with general dissemination of miliary tubercle, and with tuberculous meningitis. Foci of chronic choroiditis, which the use of the tuberculin test now proves to be tuberculous in origin, have in the past been described as congenital malformations, or as a remote result of inherited syphilis. Thus, Haab, in his *Atlas of Ophthalmoscopy* Fig. 9, 5th edition, 1908, figures a round patch of choroidal atrophy very similar to the appearance which I have endeavoured to delineate in Fig. 1, and calls it a congenital malformation. Frost, in his *Atlas*, presents a fundus which shows an excavation almost exactly similar to Fig. 1, and figures another patch of isolated choroiditis which is strictly comparable to my Fig. 3. While describing them as of congenital origin, he hints that they may be tuberculous, and quotes Carpenter's work on ocular tuberculosis in support of this view.

The cases which I have examined, and which are doubtless familiar to every ophthalmic surgeon, all have similar characteristics. The patient is a child of a decidedly tuberculous type, generally refined-looking and highly intelligent. The skin is transparent and pink, the hair blonde or brunette, and the eyelashes are long and sweeping. None of my patients has been anæmic, nor has the skin been thick or the features coarse. The children have all, at the time they were under my observation, been healthy and bright, and have not been feverish, nor have they had enlarged glands, phlyctenulæ, or other signs of tuberculosis. In fact, they have all been the exact antithesis of the child who thirty years ago would have been described as "strumous" or "scrofulous." They have not suffered from blepharitis, photophobia, lacrymation, or any external inflammatory manifestation. They have been well fed, well cared-for, open-air children. In no case has there been any keratitis punctata, vitreous opacities, or any sign of chronic cyclitis.

\* *Reports of the Society for the Study of Disease in Children*, Vol. 1, 1901, p. 169.

The final stage of the disease, as seen in all the patients, is a patch of quiescent choroiditis or choroidal atrophy, in some cases excavated, generally surrounded by pigment, situated at or near the macula. The early stage is either a single solitary tubercle, as seen in Fig. 19, Plate X, facing page 704 of the XIth volume of the *Graefe-Saemisch Handbuch* (1904), or an aggregation of three or four medium-size tubercles, as shewn in my Fig. 2. Intermediate stages are beautifully shown in Figs. 20 and 21 plates X and XI of the XIth volume of the *Graefe-Saemisch Handbuch*.

Central vision is almost always very poor. The optic disc may shew atrophy of the macular bundle, or it may itself be surrounded by tuberculous foci and be in a state of complete secondary atrophy, as in Figs. 5 and 6.

Finally, this choroiditis may be sometimes benefited by treatment with tuberculin, as evidenced by Case 1, where the disease rapidly came to a complete standstill under the influence of injections with new tuberculin (T.R.).

The condition is described by de Wecker in the old edition of the *Graefe-Saemisch Handbuch* (Vol. IV. p. 621, 1876) as *Choroiditis disseminata circumscripta* or *Chorio-Retinitis centralis* and a drawing of a section by Professor Iwanoff is there printed. The description given coincides so exactly with the cases which have come under my notice that it is obvious that the two diseases are identical, although at the time de Wecker wrote (1876) the tuberculous ætiology was not recognised. de Wecker says: "A node developed in the choroid composed of cells and irregular masses of pigment connected by a filamentary tissue which advances into the retina until this membrane is reduced to a fibrillar tissue and is definitely raised above the surrounding retina. All the layers of the retina, including the rods and cones, are preserved up to the immediate neighbourhood of the node, a fact which influences both the ophthalmoscopic picture and the functional condition of the region. At the commencement we see a reddish-yellow, and later an intense yellow, spot of round or oval form appearing in the neighbourhood of the macula. It has well-defined edges and protrudes slightly towards the vitreous. In a blond individual it is possible to see that the node lies under the transparent raised retina, and that throughout its whole extent it covers the choroidal vessels. As the disease develops, the node gets paler and paler, and the edges become defined by deposits of pigment. Finally, the area assumes all the well known characters of a *plaque* of choroidal atrophy, in which a few choroidal vessels and scattered pigment spots lie upon the now obvious sclera."

The character, then, of the disease is well marked and definite; the use of tuberculin has equally clearly demonstrated that some of the cases which I have had the opportunity of observing were essentially tuberculous in nature. The similarity of those which I have not tested with tuberculin to those which so tested have given a positive reaction, is so striking that I have been compelled to regard them all as examples of obsolescent tubercle.

CASE 1.—The condition of the right eye was fully described in a paper upon "Excavation of the Macula," which I contributed to this Journal in January, 1909. At that time, although I had suspected the tuberculous origin of the disease, I had not demonstrated it, but since then the development of foci of choroiditis in the second eye, and the tuberculin reaction obtained, have proved the ætiology beyond the shadow of a doubt.

The following is a transcript of the note of the case, as described in my first article (p. 4):—

A. J., age 12, came to the Coventry and Warwickshire Hospital in October, 1906.

Patient is a highly intelligent, but nervous boy. He has been attending at an Ophthalmic Hospital for the past five years and is now wearing dark glasses. He is perfectly healthy. No history of any injury.



V.R. under cycloplegic = fingers at one foot, not improved.

V.L. under cycloplegic = 5/10 c. + 3 = 5/5  

$$+ 0.25 \quad + 3$$

$$\begin{array}{c} \perp \\ + 0.25 \end{array} \quad \begin{array}{c} \perp \\ + 3 \end{array}$$

The left macula is dusky, but there is no definite pigmentation.

The right macula is surrounded by a slightly elevated ring of tissue which is almost as large as the disc. This ring is white on the temporal and superior aspects, below it is the same colour as the surrounding retina. The nasal side is covered with pigment but between the pigment masses the white and pink raised ring is seen. Its centre is excavated down to the sclerotic on the outer side, where it is dead white.

The inner side of the pit is covered by a lip of tissue which is redder than the surrounding fundus. There is some pigmentation on the outer aspect of the ring. Numerous choroidal vessels pass radially over the ring and dip into the depression, but they are not seen on its floor. A retinal vessel passes over the edge of the ring and dips down into the pit, crosses its floor, and passes into the retina on the opposite side. It is a finer vessel than that represented in the painting. The surrounding retina is abnormally dusky. An attempt has been made to represent the fundus in fig. 1.

This macular hole is almost certainly the result of a choroiditis at the posterior pole. There is no history of tubercle nor of syphilis, and Calmette's reaction was not obtained.

The temporal sector of the right papilla is deeply excavated and has a bluish grey colour. It presents all the appearances of white atrophy of the disc.

It will be noted that the left macula is described as dusky, but there was no definite pigmentation.

On January 2nd, 1909, the boy appeared again and complained that he was losing the sight of the left eye. Examination shewed that V.L. c + 3 was only 5/10, and this could not be improved. The condition of the right retina was unchanged, but the eye had now developed a convergent strabismus of from 2°—3°.

The appearance of the fundus is shewn on Fig. 2.

Close to the macula there is a yellowish-white slightly raised circular patch which has all the characteristics of a choroidal tubercle. Just above it is a similar patch about 1/6th its size, and not so fully developed. There is a third small tubercle about a disc diameter above the macula, and well below it there is a fourth faint area of a like nature. The whole macula region shews a diffuse pigmentation. On the temporal side of the macula there is an area covered by minute dots of pigment, as though it had been dusted with a pepper box.

The fundus was so suggestive of an acute miliary tuberculosis that I took a very gloomy view not only of the boy's vision, but of his general prospect of life.

The patient was admitted to the hospital and carefully examined, but no sign of tuberculous deposits elsewhere could be detected.

On June 7th he received an injection of .001 cc.m. of old tuberculin, obtained from Messrs. Allen and Hanbury. There was no reaction.

On June 15th, .002 cc.m. was injected, again without result.

On June 17th, .004 cc.m. caused a general reaction, the temperature rising to 100.5°F.

On June 22nd the vision had improved up to 5/5 again, but the ophthalmoscopic appearance was the same.

The boy was treated with cod-liver oil and syrup of iodide of iron. The vision at the end of another month was 5/5, and the fundus disease had made no progress. A course of injections with new tuberculin (T.R.) was now carried on for about three months. Once a week, 1/2000 of a milligramme of T.R. was injected, and the dose was raised to 1/1000 and to 1/500.

This treatment was carried out in the out-patient department by the Sister-in-charge, and the temperature was carefully noted on the succeeding two days. There was never any reaction. At the end of the course of injections, the fundus had improved greatly. The smaller deposits had almost disappeared, and the central large one had lost its yellowish hue, and was now a flat plaque with a bluish sheen.

Three more months were allowed to elapse, during which general treatment was adopted, and then a second course of T.R. injections was commenced, and continued for about six weeks. They caused no inconvenience whatever, and there was never any local irritation, a fact which redounds greatly to the credit of the Sister who carried out the treatment. I may in this connection say that during the past two years I have had several scores of injections made in the out-patient department from Messrs. Allen and Hanbury's Azoules, and on no single occasion have I seen any sign of septic infection.

At present the disease is absolutely at an end, and the only sign left is a little pigmentation and a small plaque of choroidal atrophy representing the original large tubercle.

The injections of old tuberculin undoubtedly arrested the disease, and the T.R. assisted in curing the case completely.

This case shows how essential it is when one has discovered a patch of central choroidal atrophy in the eye of a child to keep the other eye under constant observation. This form of tubercle has a natural tendency to be limited to the macular region, but treatment with tuberculin may arrest it at once, and save the sight of the eye.

CASE 2.—D.H. a girl, aged 6, came to the Coventry and Warwickshire Hospital on December 30th, 1908.



*Past History.*—On October 15th, 1908, she had a convulsion, and was unconscious for three hours. When a baby she had several fits. The aunt states that a few hours before the convulsion the right eye was much inflamed, and appeared to "sink in." The child has had several superficial "cold abscesses," scars of which remain on the arms and elsewhere. No glandular abscesses, or enlarged glands. Has squinted for two years at least.

*Family History.*—The patient's mother died of phthisis.

*Condition when first seen.*—There is slight enophthalmos of the right eye, which shows no sign of any other abnormality. Fundus normal.

VR c + 3.5 apparently normal, but does not yet know her letters.

VL c + 4  $\angle$  6/60. Picks up a shilling, but fumbles with a sixpenny-piece.

There is at times a slight convergent strabismus of the left, but when fitted with spectacles this disappears.

*Left Fundus.*—In the macular region there is a crescentic patch of choroiditis about one disc diameter in breadth. Its periphery is yellowish-white and is not absolutely sharply marked off from the rest of the retina. Inside this peripheral area is another area which is edged by choroidal pigment. The central part is pink and rather paler than the surrounding retina. Centrally there is an elongated patch of choroidal pigment. Two vessels cross the patch. The retina below it is diffusely pigmented over a rather wide area. There was no sign of optic atrophy or of temporal pallor.

The child was a bright, healthy-looking, intelligent girl, who had lived all her life at Berkswell, on the top of the water-parting between the watersheds of the Avon and Trent, in one of the healthiest spots in Warwickshire.

The left eye was under constant observation until January 15th, 1909, when she was admitted to the Hospital. The fundus appearance had undergone no change.

On January 19th, 1909, .0005 c.cm. of old tuberculin was injected into the arm. A sharp reaction resulted, accompanied by malaise and headache. After the injection the patch of choroiditis appeared to become more sharply defined from the surrounding area, and I thought, but could not be absolutely certain, that there was an expansion in the pigmented parts of the patch. No further change took place, and when last seen the fundus presented the appearance shown in fig. 3. Unfortunately a reproduction of a coloured picture in black and white, does not give all the details of the original. On November 2nd, the child appeared again with a small ulcer near the periphery of the right cornea, which, however, rapidly healed when treated with atropine.

A short course of injections with new tuberculin T. R. was carried out as a precautionary measure in the interest of the right eye rather than with any hope that the left would receive any benefit.

CASE 3.—N. B., a girl aged 5, came to the Coventry and Warwickshire Hospital on May 15th, 1909.

*Past History.*—Nothing of importance.

*Family History.* Mother has only one child, married six years, no miscarriages, shows no signs of syphilis. An uncle died of phthisis.

*Condition when first seen.*—A healthy, intelligent, bright child. A mouth breather who has recently had her adenoids removed. The whole appearance of the child is the very antithesis of one suffering from congenital syphilis.

Cannot read yet, but V.R. = fingers 1 metre

V.L. quite good, apparently normal



The left fundus is normal. The right fundus shows nothing suggesting myopic changes or stretching except a small scleral ring. At the posterior pole there is a large patch of choroidal atrophy. It is surrounded by a border of choroidal pigment, and its floor is in places pink, and in others a yellowish-white. Some choroidal vessels are seen. The pigment on its floor shown on Fig. 4 was not noted in my original rough sketch which I made in my case books.

Patient was admitted, and on May 18th received an injection of .001 c.cm. of old tuberculin. A smart reaction followed, the temperature rising to 101°F. A few days later it was noted that there was an increase of pigmentation. The pigment, at first confined to the edges, was now spreading in cord-like projections over the floor of the patch. On July 19th much increase of pigmentation was present, and a small yellowish patch was noted internal to the main area of choroiditis. Fig. 4 was painted on this date. Slight temporal pallor of the disc was present.

Patient underwent a course of injections with new tuberculin (T.R.), but no further changes have at present been noted in the fundus. No reaction was ever obtained from the dose used, 1/2,000 of a m.m.g., nor was there ever any local irritation.

These three cases are all, in my opinion, examples of a chronic benign tuberculosis of the choroid. The next four examples of choroiditis at the posterior pole are almost certainly of the same nature, but the exact ætiology was not so clearly proved to demonstration.

CASE 4. E.D., aged 6. There is no family history bearing on the case. Mother has had no miscarriages, but patient was born at the end of the seventh month. Neither father nor mother presents any of the obvious signs of syphilis, nor can any history of the disease be obtained. The child is somewhat feeble-minded.

V. R. = fingers at 1 metre. V. L. = fingers at 1·5.

Retinoscopy of the left eye shows it to be almost emmetropic or slightly myopic. Owing to nystagmus and the mental condition of the child, it could only be regarded as an approximate result.

Both eyes exhibit a lateral nystagmus, and there is an alternating convergent strabismus of 20°.

The right eye is microphthalmic. There is a persistence of the pupillary membrane; a central disc of tissue is joined to the pupillary margin by a large number (20-30) of fine filaments. The fundus cannot be seen.

At the posterior pole of the left eye there is an oval patch of choroidal atrophy almost identical with that shown in Fig. 4. This patch is, however, a more regular oval, and its long horizontal axis is about half as long again as a disc diameter. Unfortunately, when the child was written for to be admitted for the tuberculin test it did not appear, and, coming from a distant village, it has so far not been a second time.

As there is an arrest of development in the right eye, it might reasonably be assumed that this patch of choroiditis was of congenital origin, but it is so very like the condition described in Case 3, that I think it is most probably an obsolescent solitary tuberculous mass.

CASE 5.—The notes of this case have been mislaid, but there was in one eye of a child, of about 6, an oval area of choroidal atrophy exactly like the last two described. The patient was only seen once, and at present I have no details of the vision or other symptoms.

CASE 6.—This differs from all those already cited, in that both optic nerves were in a condition of almost complete secondary atrophy.

L.E.G., age 27, began to lose her sight at the age of 10 after an attack of scarlet fever. She had learnt to read and had passed the IIIrd Standard. Was treated by Mr. Simeon Snell, of Sheffield, and at the Midland Eye Hospital, Birmingham. She could last see to read when 11, but since then she has very rapidly become blind. Came to the Coventry Hospital on March 26th, 1908. No family history bearing on the case.

*Condition when first seen.*—A healthy girl, her general appearance does not in the least suggest syphilis or tubercle. No symptoms or signs of tuberculous disease in lungs or elsewhere.

The patient is practically blind; there is perhaps very slight perception of light in the left eye. The pupils do not react to light. Both discs are in an advanced state of secondary atrophy. They are not excavated, the margins are well-defined. Their colour is a greenish, yellowish grey like wash-leather. The *lamina cribrosa* is not visible. The arteries are somewhat smaller than normal, both absolutely, and when compared with the veins. Between the disc and the macula and covering the latter is an area where the retina has disappeared, and the choroid is laid bare. This area is yellowish, with ill-defined edges on the left side, and is probably very slightly raised, certainly not depressed. On the right side it is white, but not sclerotic white, and is covered by the choroidal vessels, which are very distinctly seen. This patch on the right side is sharply defined by a border of pigment. It is apparently very slightly depressed below the general level of the retina. It is difficult to get an absolute measure owing to the constant movement of the blind eyes. There are one or two isolated pigmented foci of choroiditis as shown in Figs. 5 and 6. The retina and choroid round each disc is not normal, being paler than the surrounding fundus, with a slightly granular texture. There is some diffuse pigmentation round the atrophic patches. Figs. 5 and 6 show the fundus appearance at the period.

On January 4th, the discs have altered slightly. The yellowish wash-leather colour has disappeared. Both are now a faint pea-green. The ophthalmoscopic appearance has otherwise not changed except that there is perhaps a little more depigmentation of the retina surrounding the discs.

The patient was now admitted to the Hospital and tested by injection of tuberculin. There was a smart general reaction to the second dose of old tuberculin .002 c.cm. But no changes were observed in the fundus.

The whole case may be explained upon the theory that after the attack of scarlet fever there was a tuberculous infection, not only of the macular region but of the optic nerve, which ended in the present condition of central destruction of the retina and optic atrophy. But naturally other explanations are equally possible.

Case 7.—Mrs. M., aged 47, has not seen well with the right eye for a very long time.

V.R. = fingers held eccentrically at 1 metre.

V.R. corrected = 5/5.

In the right fundus there is a central patch of choroidal atrophy; it is roughly circular and about one and a half times the diameter of the disc. Its floor is pinky-white, and is covered by the choroidal vessels. There is no pigmentation near the margins of the patch except below and temporalwards. Here there is massive pigmentation, which extends towards the periphery for a considerable distance.

In this case although the central area of atrophy is very similar to those already recorded the pathological process has not remained localised to the posterior pole, but has to some extent spread downward and outwards towards the periphery. There is considerable temporal atrophy of the disc, but as I have showed in a previous paper, this is a common result of extensive disease of the macular region.

The patient is in every respect a healthy woman. She has no signs of tuberculo-sis, but the whole aspect of the fundus is so like those cases which have proved to be tuberculous, that I have little doubt that here again we are dealing with obsolescent tubercle.

It will be noted that in cases 1, 3, 4, and 7 the diseased eye was slightly myopic but in none of them is the myopia more than 2D., and in no case was any typical sign of stretching of the fundus visible. This slight myopia may be an ætiological factor or it may not. In any case the tuberculous nature of the infection in 1 and 3 was clearly ascertained.

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## CLINICAL MEMORANDA.

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### A NOTE ON PHLYCTENULAR DISEASE.

BY

H. HAWARD BYWATER, M.B., B.S. (Vict.), F.R.C.S. (Edin.).

PRESTON, ENGLAND.

I was very much interested in the article by Sydney Stephenson and J. A. Jamieson on phlyctenular affections of the eyes in the *British Medical Journal* of April 16th, 1910, as during the last four months I have applied the Moro (percutaneous inunction) tuberculin test to a series of twelve cases of phlyctenular disease. The ages of the children were from 3 to 14 years, there were seven females and 5 males, and these comprised both recent and old cases of this trouble. In every one of these cases a positive result was obtained. In one instance the test had to be repeated.

Moro<sup>1</sup> distinguishes the positive reaction as being of three grades: (1) weak, (2) medium-strong, (3) strong. In my cases two gave a weak, nine a medium-strong, and one a strong reaction. In this last case, which was the most severe of the cases of phlyctenular keratitis tested, an ulceration  $\frac{3}{4}$ -inch by  $\frac{1}{4}$ -inch was left, which had only just healed six weeks afterwards. No general symptoms followed the tests. There was a family history of pulmonary tuberculosis in six of the cases. I examined every case and could find no evidence of phthisis but other signs of tubercle were general. There was enlargement of cervical lymph glands in eight of the cases, enlargement of the axillary glands in one, in one case there had been attacks of intestinal obstruction from enlarged mesenteric glands, and in another the history of previous tuberculous peritonitis.

Otorrhœa was present in two of the cases. The tonsils were enlarged in seven cases, and eleven out of the twelve had defective teeth. Blepharitis was present in five cases, nasal catarrh in all (four had excoriations).

Two of the cases came on after measles.

Perhaps too little attention is paid to the presence of pediculi capitis in these cases. The ova were noticed in eleven of the twelve cases. Fuchs<sup>2</sup> quotes Herz on this subject as considering these to be excitants of the disease, and their removal as often causing rapid recovery.

Possibly, the toxæmia present may be that of bovine tuberculosis; certainly the forms of tubercle associated with these cases are those considered by many to be bovine in origin.

My thanks are due to Dr. Edgar Stevenson, who kindly allowed me to apply the test to nine of these cases at the Liverpool Eye and Ear Infirmary.

#### REFERENCES.

- (1) *Muenchener medizinischer Wochenschrift*, Feb. 4, 1908.  
 (2) Fuchs and Duane.—*Text Book of Ophthalmology*, 1893.
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## A CASE OF GRAVES'S DISEASE IN A LAD AGED EIGHT YEARS.\*

BY

ERIC PRITCHARD, M.D., AND SYDNEY STEPHENSON, C.M.,  
LONDON, ENGLAND.

H. A., aged 8 years, attended the Queen's Hospital for Children on December 6, 1909, as he was said to suffer from a degree of mental dulness. His father had been an inmate of an asylum for two years. The thyroid was enlarged, and its isthmus was quite palpable. There was slight proptosis. No tremor of hands.

On examination in the ophthalmic department of the Hospital, the condition was found to be as under.—Graefe's sign well marked, especially as regards the left eye; slight exophthalmos; the eyes were perpetually watering (Berger's sign); the thyroid gland was obviously enlarged, especially as regards the isthmus. Moebius's sign not present. Pulse 82 per minute. Urine free from albumin. The retinal veins were rather tortuous. Right vision,  $\frac{5}{60}$  — 0·5 D. sph., with — 5·0 D. cyl. axis,  $180^{\circ}$   $\frac{5}{6}$ . Left vision,  $\frac{5}{12}$  + 0·5 D. sph., with — 4·0 D. cyl. axis,  $170^{\circ}$   $\frac{5}{6}$  partly.

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## NOVELTIES.

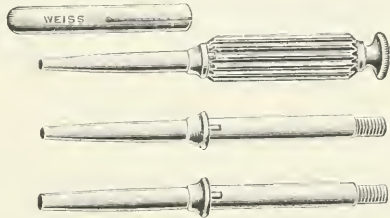
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### A MODIFIED CORNEAL TREPHINE.

BY

SYDNEY STEPHENSON,  
LONDON, ENGLAND.

IT seems probable that the sclera will be more often trephined for the relief of glaucoma in the future than it has been in the past. The operation may be undertaken either with the complicated instrument of von Hippel or with the simpler instrument of Sir William Bowman. In employing the last-named there are certain drawbacks, one of the most important of which is the difficulty of holding the trephine securely. This was recognised by Argyll Robertson many years ago, and it induced him to devise a trephine provided with a handle. With the help of Messrs. John Weiss and Son, Limited, I have carried Robertson's idea a step further. The new instrument is made from



solid steel and drilled. It carries a collar bearing a pin, which fits into the slot of the pinion-wire handle, and thereby prevents the latter from rotating. The handle is fixed by a nut, which screws on to the proximal end. The

\*Royal Society of Medicine, Section for the Study of Disease in Children, January 28th, 1910.



blades of the trephine are 1mm., 1.5mm. and 2mm. diameter respectively, and, as shown by the illustration, each blade is furnished with a cap for its protection. One handle serves for the three blades. The whole set can be fitted into a neat metal case at a slightly increased cost. If only one trephine be required it can be supplied with a fixed handle.

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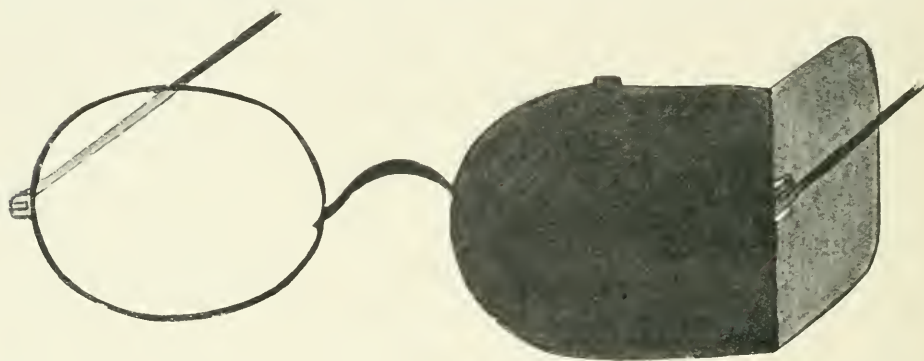
### A SPECTACLE OBTURATOR.

BY

WALTER SYKES.

HON. OPHTHALMIC AND AURAL SURGEON TO THE PRESTON ROYAL INFIRMARY.

For some years I have been using, especially in cases of children with strabismus, an obturator worn on the spectacle frame over the good eye in place of the older methods of atropinisation and eye shades. The obturator



is made of aluminium dull blacked, with a small hole for the spectacle side to pass through, and a small clip which grips the top of the lens ; it weighs under half an ounce. I have found them to be most satisfactory in use. They are made by Messrs. R. Bailey and Son, Bennett's Hill, Birmingham, who will fit them to any frame.

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### TRANSLATIONS.

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#### A CASE OF VON PIRQUET'S CUTI-REACTION WITH FATAL COMPLICATION.\*

BY

DR. E. WIEGMANN,

HILDESHEIM, GERMANY.

ON account of its harmlessness and its simplicity, von Pirquet's reaction is the favourite method of demonstrating the existence of tuberculosis in children. For these reasons it enjoys also the preference with ophthalmologists.

With the use of Koch's subcutaneous method, and with the ophthalmoreaction of Wolff-Eisner-Calmette, a certain amount of precaution is necessary,

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\*From *Wochenschrift für Therapie und Hygiene des Auges*, April 21st, 1910.

because in the former the existence of fever, and in the latter the presence of scrofulous and tuberculous eye troubles are contra-indications. On the other hand, von Pirquet's test remains free from any contra-indication, as is expressly stated in the most recent prospectus for tuberculin preparations issued by the *Kaiser Friedrich-Apotheke* in Berlin.

Yet prudence is called for in the use of this reaction, as will be apparent from the following case, which has lately occurred in my practice.

It happened in a boy, aged four years, who suffered from relapsing ulceration of the cornea, together with a very pronounced purulent catarrh of the conjunctiva and blepharospasm. That he was of scrofulous habitus was evidenced by eczema of the mouth and nose. Moreover, by scratching with his nails soiled by the abundant secretion, there had arisen in various parts of his body an obstinate pustular eczema, which, however, healed well under cleanliness and the use of xeroform powder. At a moment when the affection of the cornea as well as the catarrh might be regarded as almost healed, this child and another child free from any eye mischief were simultaneously treated with von Pirquet's cutaneous test *lege artis* (25 per cent. tuberculin obtained from the *Kaiser Friedrich-Apotheke* in Berlin).

On the following day the inoculated spots were reddened and papulous, but the reaction was not extraordinarily marked, thereby allowing the presence of tuberculosis to be assumed. After a couple of days the boy, usually lively, became pale and apathetic and lost his appetite. His condition got visibly worse; he became somnolent, and died with the symptoms of meningitis on the eleventh day after the inoculation. The inoculation spot on the arm showed no further remarkable changes. A *post-mortem* examination could not be made.

The question now is: whether the suddenly appearing meningitis is to be regarded as a chance complication, which might have occurred in a tuberculous child without inoculation, or must we blame the tuberculin inoculation for the appearance of the disease? The fact that meningitic symptoms made their appearance so quickly after the inoculation gives pause for thought.

The preparation of tuberculin cannot possibly be held responsible, since the second child treated with the same liquid remained free from complications.

In any event it is possible that faith in the complete innocuousness of von Pirquet's reaction may be shattered.

SYDNEY STEPHENSON.

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## THE RUDIMENTARY OPHTHALMOSCOPIC STIGMATA OF HEREDITARY SYPHILIS.\*

BY

Professor O. PARISOTTI

(ROME, ITALY)

It could not be doubted, however that the atrophy in our patient was secondary to previous neuritis; the appearance was too characteristic. This fact serves to invalidate further the argument in favour of the hypothesis that the disease of the optic nerve began after the accident, and that some part of the disease was to be attributed to this. I have said that the beginning of the disease was to be fixed in the four and a half months which intervened between the last

\* From *Rivista Italiana di Ottalmologia*, November and December, 1907.

musketry exercise and the accident. It was perhaps foolish to concede this, for it is possible to hold that the disease had already begun when the firing took place, and that the patient could, in spite of this, make the good shooting which was recorded in his certificates. On this point I wished to consult a dear friend and esteemed colleague, a man of unusual experience in these matters, and, further, a good shot. I asked him if it were possible for a marksman to aim properly if his right eye were amblyopic. His answer was that it depended on two points; (*a*) the degree of amblyopia (*b*) on the position of the shooter, whether he shot with both eyes open, or with one closed.

In the first case, one must know whether the sight of the right eye was sufficient to allow binocular vision. If the vision of this eye were reduced to  $\frac{1}{5}$ , and still more if it were reduced to  $\frac{1}{10}$ , binocular vision is interfered with, and the shooter must use his left eye only for aiming, using a gun with a specially curved stock. He would have to practise this new attitude as if he were a beginner. If, on the other hand, the vision of the right eye had not been reduced to such a degree, and were still  $\frac{1}{5}$ , he might retain binocular vision almost unimpaired, and would be then able to shoot as before.

On the other hand, if the man were accustomed to shut one eye to aim, a reduction of vision to  $\frac{1}{2}$  of normal would interfere with his shooting. He would have to aim with the other eye, a thing impossible with an ordinary gun. He must have his gun "off-set," and would need practice to use it.

It appears from this that if the patient were one of those who aim with both eyes open, there would be no difficulty in his shooting, even with a disease of the optic nerve, so long as the reduction of vision did not exceed  $\frac{4}{5}$  of the total. The man, however, when we interrogated him, stated that he was not accustomed to use both eyes, and we did not insist further on this possibility, which, moreover, is unimportant, for we have only to show that the disease might have begun after the last firing, and yet in February have reached a stage which would account for the state of the vision at that date. Let us turn to the facts.—The man assured me that the date of his last firing was September 20th, and the date of the accident the 8th of the following February, *i.e.*, four and a half months later. In this time the neuritis could not only have commenced but also advanced to its conclusion. If he says that it was not noticeable till after the accident, it is not necessary to reconsider this, since we have already pointed out that an eye may be totally blind and yet this be unrecognised by the patient. I may say that I could better understand the patient shooting without his right eye if he had suffered from this defect from birth or from his earliest years.

But to come to the given conclusion, I have only to convince myself that there was sufficient time between the dates given for the disease to have begun and run its course, never excluding the possibility that the disease might have begun before the accident. In favour of this hypothesis, there is an argument of the greatest importance in the statement of the injured man. He said to me: The diminution of vision has not increased, nor has there been any improvement since the date on which I first became aware of it. We have already seen that he complained of visual defect to the medical attendants five days after the injury. Putting together these facts, that the man noticed a defect of vision five days after the injury, that the defect underwent no sudden change after it was first noticed, and that the appearance of the optic nerve is to-day identical with that described in the medical certificate of the 16th of April, we are led to the presumption that the condition of the optic nerve preceded by a long interval the injury.

Here the medical attendant may object that I seem to throw doubt on his competence as an ophthalmoscopist, in saying that the patient may have

had definite neuritis, when it was really atrophy. But, as a competent ophthalmologist, he knows the difficulty of saying when the neuritis finishes and atrophy begins, especially in cases like the present.

And if my reasoning whereby I uphold, if I do not affirm, the supposition that the disease began long before the accident, does not seem conclusive to others, I will not say more on this point, because if the lesion of the optic nerve which has affected this man began after, even immediately after, the accident, it could not possibly have any causal relation.

And here is the proof of this statement :

A traumatism can certainly occasionally be the cause of inflammation or of other disease, but it can act only in one of the following ways : by an indirect path, by diffusion of action, or by stirring up in the part affected an inflammation which was already resident in the organism. It is certain, however, that in the second case, no less than in the first, there must be an anatomical connection, direct or indirect, through the vasomotor nervous mechanism.

Whenever an organ is affected by the disease of another distant organ, with which there is no anatomical connection either direct or through the vasomotor nerves, we have to deal with an infection which, starting from the organ first diseased, is thrown into the blood stream, and shows itself in various places, wherever it may be arrested by the conformation of the blood or lymph-channels.

We must enquire, then, what connection is there, either by the blood or lymph vessels, between the conjunctiva and the optic nerve? or what infection could follow the injury, and, after traversing the whole circulation, affect exclusively the optic nerve?

Not the most fervid imagination can suggest such an infection. From all accounts of the condition of this eye after the injury, the result was irritation rather than inflammation. In fact the irritation was of the slightest, being described as simple hyperæmia in the certificate furnished by the Hospital authorities who saw the patient immediately after the receipt of the injury.

Another medical man affirmed that 45 days after the injury all signs of irritation had long disappeared. None of the certificates produced by the patient, even those of his own advisers, speak of ulceration.

Where, then, could any infective material have entered? What could have been its nature? Or by what path could a vasomotor influence travel which should set up in the optic nerve an inflammation terminating in atrophy?

After this discussion, it is doubtful whether I ought to have paid any attention to the hypothesis that this injury was the result of the entrance of a minute quantity of lime into the eye, and I was at first minded to disregard it entirely, but I thought necessary to give it, to satisfy the poor workman as completely as possible, whether he really believed in the causal relation from the first, or came to believe it from the statements of his medical advisers. I have, in another work on a similar subject, pointed out how such positive statements of not invariably competent authorities are always a complicating factor in these cases of accident. I point out there that we are often wrong in accusing a poor workman of simulation, when he is usually acting in perfect good faith, misled by the certificate of his medical man, who affirms the existence of a lesion which does not exist, affirms the gravity of this non-existing lesion, and proclaims that the injury received is the direct and exclusive cause thereof.

This must always appeal to the mind of a workman, who can never be a fair judge of the merits of his own case, and hears, on the one side, his wife and



children asking for bread, and, on the other, the voice of his doctor saying, "Look after your rights, for hereafter these will not be able to rely on your work for food."

I am in no way intending to throw doubt on the honesty of medical men; I wish only to point out once again how carefully the selection should be made of the medical man in the examination of such cases, so that at least it shall not happen that he, in all good faith, be the cause of a psychical malady in the patient worse than the physical lesion, and a grave complication of the whole. If there were nothing special in the case I should have confined myself to saying: The hypothesis which attributes the malady that has almost destroyed the eye to the traumatism in question, needs no discussion, because there is no scientific basis for such discussion, and no such case has ever been observed. As a matter of fact, in the literature of the past 65 years, which I have explored, there is no case of optic neuritis, followed or not by atrophy, which can be placed in relation to a traumatism such as was suffered in this case.

And if it be insufficient to account for the lesion of the optic nerve, still less could it account for the lesions which I found in the choroid. We must, however, show the cause of those lesions, so that we may exclude the doubt that would otherwise remain, that they are due to some cause that has not yet been recognised.

It were unexcusable prolixity to enumerate and to deal with all the possible causes of optic neuritis. In the first place, we should name all general infective diseases, and in particular typhoid, recurrent fever, influenza, purpura hæmorrhagica, acute rheumatism, pneumonia, erysipelas, diabetes, acute anæmia from hæmorrhage from other parts of the body and especially the stomach.

Then come as possible causes of neuritis certain chemical poisons, and especially quinine, flix mas, iodoform, and antipyrin.

All these causes may be excluded in our case. The man affirms, and there would be no point in his lying in matters so easily verifiable, that he has never suffered from any malady of any sort. I was very careful to enquire whether he had fever about the time of the accident, and I was the more careful because influenza was epidemic about that time, and influenza is a relatively common cause of optic neuritis. The man assured me that all that time he enjoyed excellent health, so that he not only worked as a bricklayer during the day, but during the night loaded water.

I then thought of the possibility of other causes, and heredity first, since there is a good number of cases recorded of hereditary optic atrophy. I made careful investigation into this point, although the clinical picture did not correspond entirely to that of the eye under discussion, and although the hereditary disease is usually bilateral. None of the patient's relatives, however, had ever had bad sight, so far as I could ascertain. Nor had he ever heard that any of his ancestors were blind.

Another cause of optic atrophy might be arterio-sclerosis, but the age of the patient was against this, nor were there any signs of the disease in any of the superficial arteries. Further, arterio-sclerosis, to occasion disease of the optic nerve, must affect the arteries of the retina and the base of the brain. Now the appearance of the fundus oculi, which we have described, is not that of an eye in which the atrophy is secondary to changes in the arteries, nor were there any symptoms which would point towards arterio-sclerosis of the basal arteries of the brain.

The ophthalmoscopic appearances further exclude embolism and thrombosis of the central artery as causes of the atrophy. The vessels are all small both

in their passage over the disc and their course towards the periphery, but there are no interruptions or deformities which would allow the suspicion of interference with the blood flow, as such causes must occasion.

I then thought of traumatic neuritis, which could easily be caused by some accident while at work or during his frequent shooting. If a gun is not held properly held against the shoulder, it may easily in its recoil give a blow on the forehead or temple which may be followed by atrophy. But the man declared that no such accident had ever occurred. Moreover, the appearance of such an atrophy is very different from that found in the present case.

I did not fail to consider the possibility of hæmorrhage into the sheath of the optic nerve. But the slate-coloured pigmentation round the optic disc was not sufficient to prove that the neuritis and atrophy were due to such hæmorrhage. The pigment of the circum-papillary halo was too little to render plausible the hypothesis that it was hæmatogenous pigmentation, and to make the hypothesis less probable there was the absence of any pigmentation of the disc and the absence of any change in the vessels which would go with their obstruction by pressure. And then how were we to explain on this hypothesis the changes near the ora serrata?

I asked myself whether the disease were possibly a rheumatic neuritis from the local action of cold, and as a possible, though undemonstrable circumstance, I thought it might be due to chill from wet compresses applied to the eye during the moments immediately after the accident, and cooled by the air to a low temperature. But then, again, how were the changes near the ora serrata to be explained?

It was a serious question with me—how could it be otherwise?—whether the changes in the eye were the result of syphilis.

The patient affirmed that he had never contracted the disease, that the question had been before the medical authorities and that it had been suggested to them to put him under a course of specific treatment. A certificate amongst his papers helped to lead me from the suspicion of syphilis. In this certificate, the more important on account of its origin, it was stated that the patient showed no sign of venereal disease. This certificate, I say, led me from the hypothesis of syphilis, although the wording "at present" showed some reserve, entirely justifiable on the part of a medical officer who knows the forms and commencement of syphilis.

At this point, I might have stopped my work saying, "the neuritis of the optic nerve, which has gone on to atrophy in the right eye of this man, was certainly not due, as he and his advisers thought, to the injury which he received, but I am not able to indicate the real cause which has escaped all researches." And in saying this, I should say nothing unusual, because many cases of atrophy are published of which the cause is unrecognisable. These publications are in some instances of quite recent date. Such so-called essential atrophy, where, that is to say the cause remains unknown, becomes progressively more and more rare as our knowledge of pathology and our methods of investigation improve, but still the obscurity persists in not a few cases. So late as 1887, Hirschberg, of Berlin, published a paper "On those cases of atrophy of the optic nerve, of which one cannot find the cause."

But while admitting the possibility of "essential" atrophy, all or nearly all, who have to do with these cases, recognise that the unknown cause may be syphilis, that disease which appears under so many forms, and which hides itself in its lair so effectively that the most able tracker cannot always find and dislodge it.

Is there then nothing in the case before us which would make us think of one of the many forms of syphilis? He who would deny the possibility will

lay stress on the affirmation of the workman and on the certificate just mentioned. But what becomes of the man's statement, if we have to do with hereditary syphilis or even with unrecognised syphilis? The certificate contains the words "at present"—a safeguarding term, implying that there was no sign of active disease, but not excluding the possibility that the man may have been infected.

Driven on by this doubt, my mind recurred to the family history, and there I found children, both his brothers and his sons, dead in infancy; I remembered the convulsion which the patient had suffered in early life, and found justification for my suspicion in the form of atrophy of the optic nerve and in the lesions of the choroid and retina in the region of the ora serrata, in the aspect of the other eye, and in the form of the visual field. The suspicion grew and became a probability from the fact that all these points could be explained in a satisfactory and scientific manner if we assumed that the man was the subject of the hereditary or of the unrecognised acquired disease.

His mother lost two children in their infancy, between one and one-and-a-half; he himself lost a son at the age of one-and-a-half. These facts are not sufficient in themselves to prove the existence of hereditary syphilis, but taken with the formation of the teeth, with the stammering and the premature baldness, and the convulsions from which he suffered in infancy, the facts assume value sufficient to justify a judgment beyond a mere presumption.

Charcot has said that one symptom alone is as a single letter; other symptoms give us other letters from which we are able eventually to make a word, which is the diagnosis.

Amongst the symptoms which suggest, in this man, the diagnosis of hereditary syphilis, the changes in the anterior portion of the eye with optic atrophy, are most significant. There can be no doubt that here we see the result of chorio-retinitis. The pigment of the choroid is here and there completely atrophic, and the sclerotic can be seen through the transparent retina, as patches of white with pigment scattered like dust or in the forms of irregular streaks. Blotches of pigment are scattered over the retina without arrangement and without definite shape, overlying the vessels in some places, and in others, lying deeper in the retina, are crossed by them.

These accumulations of pigment form veritable lumps of the darkest sepia black. The vessels which supply this part of the fundus oculi all have their calibre reduced to some extent. To every one who is expert in the conditions of the fundus, this description will suggest, or even prescribe, the diagnosis of a chorio-retinitis, which has run its course to its most grave termination, atrophy of the parts affected. To every one who is expert in ocular pathology it will be indisputable that the process which gave occasion to these results ran its course a long time before. Every expert in hereditary syphilis will say that the process which occasioned these definite lesions, in all probability, if not certainly, ran its course in fetal or early infant life, and was due to hereditary syphilis. This has been based on the solid experience of the greatest authorities, and is recognised as true by everyone. I need only name a few of the authorities. Hirschberg compiled a large work of the greatest clinical value with prolonged continuous observations, and concludes that chorio-retinitis is most frequent in hereditary syphilis. Silex places choroiditis in the first rank of the symptoms of hereditary syphilis, and considers it of almost pathognomonic value. My master, Galezowski, was equally insistent on the clinical and diagnostic value of this condition; this he proved in his work presented to the *Société Française d'Ophthalmologie* at their annual congress in May, 1890, and in other subsequent publications.



He stated, in addition to the observations of the others named, that the choroido-retinal lesions of hereditary syphilis specially affected the anterior parts of the eye in the neighbourhood of the ora serrata.

Although therefore it may be justifiable to discuss the possible causes of the neuritis which has occasioned the atrophy in this eye, there is no reason to discuss the causes of the alterations in the choroid and retina, which may certainly be attributed to hereditary syphilis.

Antonelli states, in that splendid work in which he sums up his views on the ocular signs of hereditary syphilis, that the ophthalmoscopic stigmata are the most frequent of all

It is all the easier to admit the aetiology of such lesions, when they are accompanied by neuritis which has gone on to atrophy.

Hirschberg shows, in the work already mentioned, that papillitis is accompanied now and then by choroido-retinal lesions, and this association is frequent in hereditary syphilis. Antonelli states that the form showing central and peripheral lesions is the most common in hereditary syphilis. There is an obvious objection. How, it will be said, can you attribute the conditions of this eye to hereditary syphilis, when the adviser of the Insurance Company, both alone, and after, in consultation with the medical adviser of the insured, saw neuritis in the active stage?

Well, apart from the difficulty in deciding whether in a case of atrophy from neuritis, the inflammation is entirely subsided or whether it is still active, even if we admit that the neuritis is still active, we are not thereby constrained to exclude hereditary syphilis as the cause.

Received authorities, both ophthalmologists and syphilologists, state that hereditary syphilis may give signs of its presence in the delayed form, because it appears long after birth. Of oculists, I will select only only the most recent writer, because the accuracy with which his *Manual of Ophthalmology* is compiled, allows one to feel confidence that in each subject he combines the best and most reliable opinions. Morax says, speaking of optic neuritis of syphilitic origin, that this neuritis may appear in all stages of hereditary or acquired syphilis. Of syphilographers, I select Campana, of our University, who stands amongst the first both for extent of knowledge and clinical experience. On pages 204 and 205 of his "*Frascatorius*" he speaks of the delayed form of hereditary syphilis as follows: "After long discussions, affirming or denying this possibility, it is now admitted in the majority of clinics, thanks especially to the work of Sygmund, Virchow, Zeiert, Sperona, Gamberini, Pettinaus, Ferrari, Jennover, Porret, and Hutchinson. There may be quoted numerous observations of the most notable syphilographers, amongst them a case of Melchior Robert, in which syphilis manifested itself clearly in a patient aged 63, a case of Ludet, of a lady of 43, unmarried, who died of a gumma of the liver, and another, aged 46, who died of a cerebral gumma, and a case of Lanceraux, who at 41 presented divers gummatous lesions."

Antonelli is little inclined to admit these late manifestations, though he is unable to deny them, even in the case of the optic nerve, where inflammatory affections are seen in adolescence and puberty. Why should they be unknown in manhood? This point seemed to me to be rather obscure in his book, "*Les stigmates ophtalmoscopiques rudimentaires de la syphilis héréditaire*," and I wrote to him on this matter; here is his answer: "There is no impossibility, nor even improbability, in admitting such late manifestations of hereditary syphilis. There are numerous examples of nervous manifestations, such as general paralysis, at an even later date." The word "later" refers to the age (37) of the man whose case I am recording.



Antonelli prefers to regard these delayed manifestations as relapses of disease, whose first occurrence was at the age usual for such accidents, rather than as first attacks at the late date. In the special case of the optic nerve, the neuritis may be an exacerbation of a process which has existed since foetal or early infantile life, which became stationary then without doing grave injury to the function of the nerve, and allowed the patient normal visual acuity. This would explain how the man might have been a good shot up to his 37th year at which time the neuritis relapsed, to be followed on this occasion by true atrophy.

All this is in agreement with the opinion expressed above, that the injury had nothing to do with the changes visible in the fundus. But, it will be said, your reasoning conflicts fatally with two objections, the certificate of the very competent medical authority, who states that there was no trace of syphilis in this man, and the fact that he was indubitably a good shot up to the day of the accident.

These two objections are imaginary. The certificate is no proof against the statement that the disease in this eye is syphilitic. The doctor affirms that at the present time there exist no signs of present or past syphilis. Suppose, however, that these signs were not accessible to him from want of proper methods of examination? Is a dermatologist necessarily an expert ophthalmoscopist? Who can say that syphilis, like hysteria, may not present one symptom only? Who would like to deny that this may be more possible for hereditary syphilis than for any other form? We oculists often find ourselves obliged to affirm the existence of syphilis, in spite of the most sincere denial on the part of the individual, and the negative result of examination by the most expert syphilographers. We are sure that we are not wrong, because the single symptom present, although single, is pathognomonic. There are innumerable cases where ocular lesions are present without any other signs of hereditary syphilis. The present case is one where syphilis prefers to attack the eye. As a matter of fact, there were in the other eye signs as, for example, the semilunar halo alongside of the optic papilla with its pigmented boundaries, that close to the disc very dark, and the other thinner, and the slight pallor of the disc, which seems as if covered with a very fine veil. All these are among the rudimentary ophthalmoscopic stigmata of hereditary syphilis, which Antonelli described and other authorities have confirmed. I should add, to prevent any possible erroneous interpretation of the halo in the left eye, that this eye was not myopic.

The other objection with which my reasoning must come into collision, is the undoubted fact that the man was an excellent shot up to the day of his accident. But it is very easy to get round this. There are two possibilities. The inflammation began after the trauma, in which case there is no explanation needed of his shooting. Or the neuritis which was found by the examiner of the insurance company, four and a half months after the injury, was the expression of a relapse of the inflammation of the optic nerve which had developed at the age when these accidents are common, and had for the time subsided, leaving good visual acuity, allowing the man to shoot excellently. The optic neuritis might allow good vision, even though the ophthalmoscopic appearances were those of optic atrophy.

From all this I say that the disease of this man's right eye depends, not on the injury, but on hereditary syphilis, although it appeared shortly or immediately after the accident.

It would be right to speak of a coincidence, but not of a dependance, as of cause and effect.

We must remember that the time intervening between the last firing and the injury is more than enough to allow the inflammation of the optic nerve to begin, run its course and end in atrophy.

The fact that the man noticed the failure of vision after the injury is of no value as evidence that the disease which caused the reduction of vision did not begin during this intervening time. It is an unnecessary waste of time to discuss further the possibility of the unrecognised loss of one eye, a loss which is the more easy in people following an occupation demanding little acuity of vision.

My statement of facts and commentary was finished and despatched when I learnt that it had led the insurance company to request the man to pay another visit to their oculist. He replied affirming the existence of the choroido-retinal changes which I had described in the right eye, and stated that he had found similar changes in the left eye also, where no changes had been found by us at our previous examinations (my last examination was in the month of July last).

What better proof could there be that these rudimentary stigmata are of the greatest value in the diagnosis of hereditary syphilis? I do not attempt to exclude, what in my opinion can never be excluded, unrecognised syphilis. In this case, however, the probability of unrecognised syphilis is less, on account of what I saw in the left eye; this can be interpreted in no other way than that of Antonelli, who placed such changes among the rudimentary ophthalmoscopic stigmata of hereditary syphilis.

HAROLD GRIMSDALE.

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## REVIEW.

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### DETACHMENT OF THE RETINA REVIEWED.

BY

ERNEST THOMSON, M.D.

SURGEON TO THE GLASGOW EYE INFIRMARY.

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#### PART IV.

### PROGNOSIS AND GENERAL CONCLUSIONS.

It is now, unfortunately, my duty to the readers of *THE OPHTHALMOSCOPE* to endeavour to reach conclusions of some sort on the subject of detachment of the retina. Conclusions, which are reached after the study of insufficient premises, usually are not regarded as of much value; yet there is no manner of doubt that the conditions underlying detachment are so little understood, possibly on account of their variety, that they do form at the present time an insufficient basis for the building of a sound edifice of knowledge.

There has been some temptation to survey the various points taken up under the heading of etiology; yet on reading that part of my work again, I do not think I can do better than leave it as it stands, an indication of the difficulties of arriving at finality. Taking a bird's-eye view of this literature, one is more and more inclined to regard detachment of the retina as a symptom rather than as a disease dependent on any one set of conditions; as a symptom which results from forces which tend to push or to pull the

retinal membrane away from the choroidal membrane to which, for the most part, it is but loosely applied. Doubtless, it frequently happens that push and pull are jointly at work. It may be that they are always jointly at work. At any rate my meaning may be illustrated by taking two extremes, on the one hand the obvious *push* of the retina from the choroid as the result of a high degree of subretinal effusion in nephritis, and, on the other hand, the equally obvious *pull* of the retina from the choroid as the result of cicatrization which may follow a penetrating wound of the globe. Between these two extremes lie the cases about which nobody seems able to state with certainty whether push or pull is the stronger agent.

Now, since really successful prognosis depends largely on intimate knowledge of the conditions present, or at any rate, likely to be present, and since such intimate knowledge is here often lacking, it is clear that prognosis in detachment of the retina is more a matter of guess work than in many other affections. The guess may depend either upon the personal experience of the individual or upon the experiences of others; but, as I have endeavoured to show in the chapter entitled "*Vis Medicatrix Naturae*," the *vis medicatrix* is the most contradictory power imaginable. For instance, authors have held that when there is a retinal tear a case is hopeless; yet a patient who had a detachment was cured by a blow which is presumed to have ruptured the retina. Patients who have received medical and surgical treatment without any relief have afterwards recovered spontaneously. Cataract has developed, whether or not secondarily to the detachment, and behind the cataract the retina has become reattached. What has happened even once may happen often again, and it is only reasonable to conclude that statistics of cure based upon operative results must be accepted subject to the reservation that a certain number, at least, of the cases might have recovered spontaneously, and subject also to that other important reservation that relapse may occur at any time upon the slightest provocation or without any apparent provocation at all.

Having thus pointed out the difficulties in this matter of prognosis I proceed to do the best I can with the material at command.

### THE PROGNOSIS OF DETACHMENT OCCURRING IN GENERAL DISEASES.

There are two general diseases only in which it seems possible to formulate a definite prognosis. These are chronic nephritis and nephritis of pregnancy. The association between detachment of the retina and such diseases as the exanthemata, gout, rheumatism, malaria, is not sufficiently decided to yield the necessary basis for prognosis. As to syphilis, it is probable that true detachment, as apart from simple slight elevation of the retina, is so rare as to yield no statistics.

**Chronic Nephritis.** The prognosis in chronic interstitial nephritis seems sufficiently decided. Five cases occur in my notes in which detachment occurred in this disease. Everyone one of them died. Dickinson's<sup>1</sup> patient was aged 11 years, Davidson's<sup>2</sup> was 14 years, Anderson's<sup>3</sup> was 9 years, and Sawyer's<sup>4</sup> was 11 years. Interest in the detachment is thus merely academic. In Uthoff's case of chronic nephritis the retina became reattached but the patient died.<sup>28</sup>

**Nephritis of Pregnancy.** The prognosis here is very different. Adamuek's<sup>5</sup> patient had double, total funnel-shaped detachment which came on during eclampsia in the eighth month of pregnancy. She recovered with  $V=\frac{20}{60}$ . Heilbron<sup>6</sup>, whose work contains a number of references, says that the

characteristics of these detachments is that they cure spontaneously, leaving in the re-attached parts sometimes vascular lesions, sometimes pigment changes. Vision is partly re-established as a rule, rarely perfectly. Guende<sup>6</sup> knew of a patient with vision reduced to vague p.l. by double detachment who recovered vision  $\frac{6}{10}$  after parturition. Scherenberg's patient,<sup>7</sup> with double detachment, died after the induction of labour. The eyes were examined *post mortem*. (See this Review, November, 1909, p. 752). In Greenwood's<sup>8</sup> case the retina reattached but vision remained poor on account of optic atrophy. In Wilson and Hird's case<sup>20</sup> detachments in both eyes disappeared after the induction of premature labour.

We have then in nephritis a groundwork for a positive prognosis.

### THE INFLUENCE OF VARIOUS CONDITIONS AND CIRCUMSTANCES ON THE PROGNOSIS.

**Myopia.**—In 1857, Von Graefe<sup>15</sup> had seen a sufficient number of cases of detachment to come to the conclusion that when detachment is not associated with pre-existing sclero-choroiditis posterior, in a large proportion of cases it may remain stationary for an indefinite time, and there may be improvement in visual acuity. Further, it generally remains one-sided. But it is otherwise if the detachment follow sclero-choroiditis posterior. It may then remain stationary for a while but fresh "vitreous effusions" lead up to further detachment.

Von Roosbroeck<sup>16</sup> regarded myopic detachment as always incurable.

Galezowski<sup>17</sup> divided myopic cases into two groups. In low degrees of non-progressive myopia treatment by rest, leeches, blisters, etc., may lead to cure, but detachment in high myopia is hopeless (1877).

It is interesting to note that Horstmann,<sup>10</sup> in 1898, came to the same conclusion as Galezowski regarding the curability of detachment in low degrees of myopia. It will be remembered that Horstmann obtained five complete spontaneous cures out of 106 cases of spontaneous detachment. In all these five the degree of myopia was from 4 D to 7.5 D, and all presented crescents not larger than two-thirds of a disc diameter.

Chevallereau<sup>18</sup> has said that non-myopic cases are curable as a rule.

Knagg's<sup>19</sup> has classified detachments in the following way: (1) In fairly healthy eyes as the result of concussion such as a blow, or coughing. (2) The direct result of inflammatory effusion dependent on severe traumatism or organic disease. (3) In the subjects of some chronic disease such as myopia. He recognised that spontaneous recovery is plainly more probable in 1 and 2 than in the third group, in which latter he has never seen more than very partial improvement.

Lagrange,<sup>20</sup> in 1899, stated that he "had tried everything," yet had not seen a single myopic detachment cured.

Deutschmann's very latest statistics<sup>55</sup> are worthy of careful study. From these I understand that the percentage of various refractive conditions in detachment is, in his experience:—

Myopia, 1 to 6D	..	...	18.2 per cent.
" 7 to 12D	...	...	20.2 "
" 13D and over	...	..	21.4 "
Emmetropia	...	...	12.7 "
Hypermetropia	...	...	2.8 "

From these figures the remarkable fact emerges that "the chance of detachment does not increase to any considerable extent with higher grades



of myopia." This statistical result is thus opposed to the opinions of Galezowski and Horstmann mentioned above, and it is the more remarkable in that eyes which were myopic 13D and more, included some high myopics which were aphakic from operation.

I may insert here, for want of a better place, the opinion of Froelich<sup>69</sup>, based upon statistics, that among myopes of similar ages detachment is more frequent with than without operation for the myopia.

I have never seen it suggested that eyes which are myopic, due to anomaly of curvature, may not be in the same category as the rest. No doubt, curvature myopia is not common; I merely call attention to a possibility.

Though there is a general opinion that the prognosis of myopic detachments is worse than that of other detachments, a reference to the article on "Spontaneous Cure" (February, 1910, p. 102), will prevent us from becoming too pessimistic.

Regarding the influence of *retinal tears*, a conclusion does not seem possible. Schweigger<sup>21</sup>, in 1882, and Horstmann<sup>10</sup>, in 1898, considered that the prognosis is bad. Yet, considering the difficulty in determining the question of retinal tear in many cases, and considering that certain operative measures from the time of v. Graefe to that of Deutschmann, have aimed at tearing the retina as a curative measure, to say nothing of the cases in which improvement has commenced after spontaneous tear (Graefe, Remak), one must withhold judgment in the meantime.

**Traumatism as a cause of detachment.**—The views of Galezowski as to traumatism as the exciting cause of myopic detachment have already been mentioned. (November, 1909, p. 748.)

Landolt,<sup>22</sup> in 1884, held that traumatic detachments when not too extensive and not accompanied by retinal tear tended to cure spontaneously. Courseillant, at the same meeting of the *Société française d'Ophthalmologie*, said that in healthy non-myopic eyes traumatic detachments often cure spontaneously.

Knagg's view has been mentioned (*vide supra*).

Parent<sup>23</sup> is responsible for the statement that spontaneous cure takes place in half the cases of traumatic detachment.

Lagrange (*loco citato*) sharply distinguished traumatic from myopic cases.

Hartridge<sup>124</sup> would only expect recovery when detachment is due to a blow, or caused by a small hæmorrhage or by some inflammatory exudation.

In spite of the foregoing authorities, I am not convinced that the evidence is conclusive for a better prognosis in traumatic than in myopic cases. It is true that traumatic detachments have been excluded, for the most part, from this review, yet I may point out that the issue is complicated by the facts that many traumatic detachments must take place in myopic eyes in accordance with the laws of chance, that according to Galezowski's experience traumatism is a very important factor in myopic detachment as a rule, and, lastly, that possibly the myope from his actual visual defect is more liable to traumatism than other people.

**Choroidal Exudate as a Cause of Detachment.**—It is difficult to know what to say on this subject. The sub-retinal exudate which causes detachment in nephritis has already been dealt with. If the choroiditis which may be supposed to lie at the root of myopic detachment be excluded, and traumatism set on one side, we are left apparently with a list of rarities in which a choroidal exudate, hæmorrhagic or otherwise, may be supposed to be the sole cause: in which the retina is simply pushed off the choroid. Such cases are, e.g., those of v. Graefe, Berlin, Brockaert, Fish, Bellencontre and others previously mentioned (November, 1909). The opinion of authors seems

to be that cases in which the retina is detached by serous or hæmorrhagic effusion pure and simple are relatively curable.

**The Situation of the Detachment.** It is remarkable that in all of the five cured cases reported by Horstmann<sup>10</sup>, the detachment was in the upper part of the retina, occupied less than half the retina and did not affect the yellow spot. The subretinal fluid did not become displaced downwards, but was gradually absorbed in from two to ten months.

It is no less remarkable that Deutschmann<sup>56</sup> waits until the fluid has gravitated downwards before he performs his operation, and considers that the speedy gravitation of the subretinal fluid is in the patient's favour.

**The Age of the Patient.** Of Horstmann's five cases of cure, four were aged less than 25 years and the youngest was 17. One was aged 48 years. Emerson's<sup>25</sup> statistics show that of eight re-attachments, six were under 28 years. Of Deutschmann's cured cases in 1899, only six out of 26 were over 40 years of age.

**Cataract Formation.** We have already seen (February, 1910, p. 104) that the formation of a cataract does not necessarily influence the prognosis for the worse. The cases are not sufficiently numerous to allow one to say more than that. Were a sufficient number of cases of the kind to be put on record, it is not difficult to imagine the establishment of still another method for the cure of retinal detachment!

### SPONTANEOUS CURE AS A FACTOR IN PROGNOSIS.

[Two cases of recovery of function should be added to those already mentioned (February, 1910, p. 106), namely, the case by Knaggs and that by Armaignac. Both are referred to under "Spontaneous Cure" though omitted under "Recovery of Function."]

By *spontaneous cure* is to be understood, as previously explained, spontaneous re-attachment with or without recovery of function, whether that re-attachment have resulted from no treatment at all or from simple medical treatment and rest.

The statistics of spontaneous cure are of the most contradictory character.

Galezowski<sup>9</sup>, writing in 1888, had seen 784 cases of detachment and only one spontaneous cure.

Horstmann<sup>10</sup> ten years later had had five complete spontaneous cures with recovery of function out of 106 cases of "spontaneous" detachment. His treatment consisted in rest, diaphoresis, etc.

Adamuck<sup>11</sup> succeeded in obtaining re-attachment nine times out of 29 cases of various origins by very simple treatment (atropin, pressure bandage, and iodine internally) combined with rest in bed. But if only cases which remained well for over a year be taken, Adamuck's percentage falls to 14.

Lagrange<sup>12</sup>, in 1899, had never seen a myopic detachment cured.

In 1902, Hartridge<sup>12a</sup> could not remember an absolute recovery, and Jessop<sup>12a</sup> had not known of a recovery without recurrence.

A most suggestive remark with regard to spontaneous cure was made by H. Dor in 1899, when enlarging on his method.<sup>13</sup> "The frequency of spontaneous cures has been cast up to me, meaning to insinuate that most of my patients would have been cured without treatment. . . . In a recent work, Muglich has collected 136 cases of spontaneous cure scattered in ophthalmic literature, *but what is this figure by comparison with the frequency of detachment, seeing that I myself, in 1895, had seen 500 cases?*" Similarly, Deutschmann<sup>14</sup>, in 1903, had only seen two or three cases of spontaneous cure in two or three hundred detachments, that is about 1 per cent.

Wernicke's<sup>26</sup> statistics give 18 spontaneously cured cases (no treatment at all in these) out of 422 detachments, that is 4·2 per cent.

These quotations from the literature bearing specially on the frequency of spontaneous cure seem to differ too widely for the striking of an average. Probably the figures of Adamuek and even those of Horstmann and of Wernicke are too optimistic. If we omit these, the remaining authors are profoundly pessimistic.

If, on the other hand, we were to adopt the optimistic figures of Adamuek, as representative of what usually happens, it seems doubtful whether operative treatment would ever be justifiable.

We find then, that a number of authors, of whom Galeczowski probably had the largest experience, give us a very low percentage of "spontaneous cure," varying from **zero** to about **1 per cent.**, let us say, while other authors offer figures which are distinctly more optimistic. Thus Adamuek gives us **14 per cent.**, Horstmann **4·7 per cent.**, Wernicke **4·2 per cent.**

How are we to reconcile these two extremes?

### STATISTICS OF CURE BY OPERATIVE METHODS.

It is of the utmost importance to ascertain, if possible, whether operative measures are going to yield any better results than expectant treatment. The figures which I shall produce from the writings of various authors must be accepted, generally speaking, with much reserve. Still they will probably teach us something.

**Scleral Puncture.**—Under the heading "scleral puncture" I have, after some consideration, decided to include for statistical purposes, Wolfe's operation. I shall not separate Wolfe's operation from simple scleral puncture.

The earliest noteworthy statistics known to me are those of Hirschberg in 1879<sup>30</sup>. Out of 113 cases of detachment he treated 10 by scleral puncture. Of these one was completely cured at the end of a year, five were improved but suffered relapses. **10 per cent.**

Nettleship in 1884<sup>31</sup>, only admitted temporary improvement in one out of about twelve cases of "tapping."

Wolfe's<sup>32</sup> original case, reported in 1878, deserves special comment because it may be regarded as an equally good argument for expectant treatment as Wolfe claimed it to be for operation. The detachment was bilateral. The right eye was operated upon. On the twenty-second day the patient could read the time on a watch at 2 feet. Wolfe goes on to say: "The remarkable feature in connection with this case is that the result, both visual and ophthalmoscopic, is more perfect in the left than in the right eye." He ascribed this to sympathy, and apparently failed to see that it constituted an excellent argument for the value of rest in bed. After this Wolfe and his assistants, McGregor Robertson and A. T. Thomson, published various cases, and repeated them in different journals so that they became very confused. I shall content myself with McGregor Robertson's statement in 1884<sup>33</sup>, that Wolfe had had 10 successes out of 14 operations. **71 per cent.**

Snell's<sup>34</sup> three cases of scleral puncture are too indefinite for any figure to be taken.

Coppez<sup>35</sup> said that a modified Wolfe operation rarely led to a cure, but almost always to amelioration. Later, he reported one complete cure in a 15 D myope.

Webster's<sup>36</sup> cases are given in detail. All of 11 eyes operated on were improved temporarily. One was cured apparently permanently (patient only five months under observation). **9 per cent.**

Krönheim<sup>37</sup> has claimed five cures, four great improvements, and four slight improvements, out of 21 cases. **24 per cent.**

The statistics of Grosz<sup>38</sup> are most interesting in that this writer gives the vision obtained in each case. In 67 cases of detachment occurring at Buda-Pesth scleral puncture was performed 21 times. Improvement took place in four cases. Cure is not claimed in any case, but in one vision rose from counting fingers at half a metre to  $\frac{6}{18}$ . If we venture to count this a cure then approximately Grosz' figure is **5 per cent.**

In three cases out of the 21 vision was *made worse*.

It is clear that no useful purpose would be served by attempting to strike a mean between zero and 71 and calling this the percentage figure for cures by scleral puncture. I suggest that **10 per cent.** is about the maximum which these figures represent if the manifestly too optimistic be excluded. Further, in thus estimating the value of this or of any other method of operative treatment, we must remember that the cases which are made worse are seldom definitely stated as has been done by Grosz.

**Iridectomy.** I do not think even an approximate figure can be given for cures by iridectomy. Dransart<sup>39</sup> claimed 7 re-attachments out of 23 cases by a mixed treatment (rest, pilocarpine blisters and even sclerotomy) of which iridectomy was the chief part. **30 per cent.**

Later Dransart claimed 12 complete re-attachments out of 16 iridectomies. **75 per cent.**

At the same time Galezowski<sup>39</sup> stated that his original success with iridectomy had not proved permanent.

Coppez<sup>35</sup> had one complete cure out of 18 iridectomies, **5.5 per cent.** *Five times the operation had been disastrous.*

From the Buda-Pesth statistics of Grosz (*loc. cit.*) it appears that iridectomy was done 18 times. No cures are claimed; six cases improved, but *five were made worse*.

The similarity between the figures of Grosz, 1890, and of Coppez, 1887, is remarkable.

**Methods which cause Choroido-Retinal Adhesions.**—*Cauterization of the Sclerotic*, as a method by itself, and not as part of combined treatment has yielded me no statistics.

*Galvano-puncture.* Stillson's<sup>41</sup> patients, five in number, in four of whom the retina remained attached a year after treatment seem to constitute a record. One case was myopic 2D, two were traumatic, and in two the cause was unknown. The myopic case recovered, V.A. =  $\frac{2}{90}$ , no recurrence after one year. Of the traumatic cases one recovered to  $\frac{2}{90}$ , and had no relapse after three years, the other was not improved. Of the remaining two cases one reached  $\frac{2}{100}$  and had no recurrence after two years, the other had  $\frac{2}{10}$ , and at the end of one year the retina was attached. **80 per cent.**

Wernicke's<sup>26</sup> Breslau statistics of 422 cases of detachment (65 operated) show that treatment was by means of the galvano-cautery and repeated punctures 13 times. Two of these cases were cured. **15.3 per cent.**

*Electrolysis.* Van Moll<sup>40</sup> treated 3 cases without result.

Terson<sup>41</sup> out of 12 cases had one cure and one made worse. **8.3 per cent.**

Snell<sup>42</sup> had 3 cases, no complete cure.

Méruval<sup>45</sup> claimed 2 cures out of 10 cases. **20 per cent.**

de Grandmont<sup>50</sup> treated a forty-eight hour detachment with V.A almost *nil*. The detachment disappeared after the second application, and V.A (previous to detachment =  $\frac{1}{3}$ ) became 1.

Montgomery<sup>43</sup> has stated that electrolysis has no curative value, and that it induced an acute glaucoma in one of his cases.



Lagrange and Fromaget<sup>44</sup> each saw detachment increase under electrolytic treatment.

**Iodine Injection.**—Very little need be said about this method in spite of the vogue which once it had. Schölers' own statistics seem to be the most trustworthy. In 1889<sup>46</sup> he had treated 26 cases. In three the result was "disastrous," in five "insufficient," in six "transitory," in six "progression towards cure," and in six "a permanent cure with complete re-attachment." Four years later Schöler referred to five cases reported in 1889. The results are (1) cure for four years, loss of sight last two years; (2) cataract developed; (3) cataract developed; (4) cataract developed; (5) lost sight of. Total result is therefore one relative cure in 26 cases or a little less than **4 per cent.**

Bull<sup>47</sup> reported five cases. In two panophthalmitis developed, two were made worse than before, and one "improved."

So also Baduel<sup>48</sup> reported five cases. In all the vision was made worse.

**Müller's Operation to Reduce the Size of the Eyeball.**—I have not seen the originals, and do not wish to be quite positive, but I gather from my abstracts that Müller claims to have cured all his cases of myopic detachment<sup>49</sup>.

**Subconjunctival Injection.**—Under the heading of subconjunctival injections I purposely do not include Dor's method, or other mixed treatments of which subconjunctival injections form a part. Such mixed treatment must be considered separately, consequently the available figures for subconjunctival (including subcapsular) injections are few in number, or at any rate are few in my notes.

Bourgeois<sup>51</sup> using a solution amounting to 30 per cent sodium chloride in neutral glycerine (with a small percentage of sublimate as an antiseptic) obtained in a first series, 1 cure in 10 cases, and in a second series, 1 cure in 12 cases, total 2 cures in 22 cases, or **9 per cent.**

Staerkle<sup>52</sup> using sodium chloride from 4 to 10 per cent. obtained complete re-attachment 6 times out of 23. Three of these were permanent; or **13 per cent.**

Wood<sup>53</sup> summarized the work of Tarducci, Mellinger, Dor, de Wecker and Schiess-Gemeuseus in treating detachment by subconjunctival injection of sodium-chloride solutions varying from 2 per cent. to 30 per cent. He concluded that the method yields no better results than those obtained by other methods.

L. Dor<sup>54</sup> claimed 2 definite cures out of 25 detachments by the intra-capsular injection of various salines. This is equal to **8 per cent.**

Bourgeois, Staerkle and Dor all claim cases which "improved" in addition to those "cured." There are no reports of cases "made worse," which is a very important point.

The mean of these three figures gives **10 per cent.**

**Deutschmann's Operation.** It does not seem worth while to go back on the statistics of the operations of Graefe and Bowman. These operations were done almost entirely in pre-antiseptic days, but, apart from that, the operation of Deutschmann in modern times may stand as the type of operation in which tearing of the retina is an essential feature.

Professor Deutschmann himself has been kind enough to send me an advance copy of his essay on detachment prepared as part of the jubilee publication by the pupils of Professor Leber ("*Zur Kenntniss der Netzhautablösung und ihrer Behandlung.*")

From this,<sup>55</sup> it appears that Deutschmann has operated upon 302 out of 345 detachments in 260 patients. Of these 302, the treatment is regarded as complete in 267.

The results are :—

Cured	...	...	...	70	=	26.1 per cent.
Improved	...	...	...	94	=	35.2 per cent.
Failed	...	...	...	103	=	38.7 per cent.

But 42 of these 267 were hopeless from the first. If these be neglected, we have : Cured, 31.1 per cent. ; improved, 41.3 per cent. ; failed, 27.6 per cent. The following statement is sufficiently explicit :—

"It follows from this that with regard to the results of my methods of operation, I have nothing to alter and nothing to withdraw from the statement which I was able to make when my statistics were first of all brought forward. Here it is, word for word : 'I record, in the first place, only the simple fact that out of 101 eyes operated upon by me up to the present, 26 have been cured—that is, 25.7 per cent.' My second set of statistics gives : 'Cured, 52 = 24.7 per cent.' Now I record : 'Cured 70 out of 267 eyes = 26.1 per cent.'"

I do not think there is evidence in this article to show whether, or in which of the cases, injection of vitreous was performed. In any case it is well known that Deutschmann only advises it in most desperate cases.

As to what Deutschmann understands by cure there is no dubiety. In a personal communication dated at the end of February, 1910, he says, respecting the jubilee essay : "You find there the number of my cured patients ; by those cured are counted the cures in your meaning—complete reattachment of the retina in anatomical sense. Only those patients who have been cured for two years are counted. The longest cure is from 1890, the others of any year since that time till January, 1908." Professor Deutschmann most kindly wrote to me in English and I have altered the wording a very little to avoid the slightly German construction.

It may be mentioned that in 1903 Deutschmann stated<sup>14</sup> that it is not the most recent cases but those of six or nine months' duration that are most favourable for operation.

Jutzrenka<sup>57</sup> tried Deutschmann's "*durchschneidung*" in nine cases, and injection of rabbit vitreous in one case. He concluded that the former offered no warranty of permanent cure better than other methods of operation. In the case of vitreous injection blindness followed extension of the detachment.

In Wernicke's statistics already referred to we find that Deutschmann's operation was performed in two out of the 65 cases operated upon. There was no improvement.

Few ophthalmologists can have given the method a fair trial else I must have found other references in recent literature.

Finally, then, Deutschmann's operation yields **26.1 per cent.** of cures.

**Mixed treatment.**—Cases treated medically by rest, atropin, bandage and so on, do not come under consideration here, but the figures obtained from partially operative or mixed operative methods require careful study.

Grosz's figures—already referred to<sup>38</sup>—are pessimistic right through. Of the 67 detachments treated, 9 had mixed treatment, namely, scleral puncture and pilocarpine injections ; in 6 there was no result ; in 3 there was improvement.

In Wernicke's statistics<sup>26</sup> it is recorded that scleral puncture, combined with sub-conjunctival injections of sodium chloride, 2 to 5 per cent., was carried out 41 times, and gave 2 cures and 11 improvements, *i.e.*, **4.8 per cent.**

The most definite mixed treatment is that of H. Dor. It consists "in applications of the artificial leech, cauterizations with Guersant's needle, which I prefer to the galvano-cautery, because one does not risk perforating

the sclera, and, since 1895, in accordance with the advice of Dianoux, sub-conjunctival injections of 10 per cent. sodium chloride; lastly, in dorsal decubitus, prolonged but not absolute, and several sweatings with the decoction of the four sudorific woods." Through the kindness of a chemist friend I am able to state that "*Tisane de quatre bois*" is a decoction of guaiac, sassafras, sarsaparilla, and china smilax.

"As to the sudorific," Dor goes on to say, "I have for several years given up pilocarpine and salicylic preparations, on account of their harmful effect on the general health of the patient."<sup>58</sup>

Referring to the cases which Dor treated between 1896 and 1904, we note that he purposely (in 1907) refrained from publishing results subsequent to 1904, as being too recent. The title of the paper to which I am now referring is "*Mes Résultats éloignés du Traitement du Décollement de la Rétine*," so that we may assume that Dor's results are based upon a cure of two years at least. In the period referred to he saw 93 cases. Forty-two would not undergo the treatment. In 11 there was no vision, and complications were present. Forty remain, in which the treatment was undertaken in earnest. Of these 40 cases, Dor obtained 12 "very good" results. But five became blind. Total "very good" results, 7. There were 13 "good" results (patient able to work and read his newspaper, but with lowered V.A.). Of these, 8 were not permanent. Total "good" results, 5.

The "very good" results which may be classified as definite cures amount to **17·5 per cent**. It is necessary to explain that Dor, in counting, as he has done, 37·05 per cent. of "satisfactory" results, includes not only the "good" cases (12·5 per cent.), but also three ameliorations (counting fingers).

Ramsay's series<sup>27</sup> of 50 cases has a very notable value. The cases were not selected. The series included every case that came for treatment during four years. Every one of them received treatment. I propose to quote from Ramsay's paper at some length, since it was inadvisable to burden the article on operations with mixed treatment.

"The patient is kept in bed for most of the time on his back, and both eyes are closed with a pressure bandage. Should the site and character of the detachment be deemed favourable, the sub-retinal fluid is always evacuated by scleral puncture. Every effort is taken to improve the patient's well-being, he is suitably dieted, and special care is taken to insure regular and efficient action of the bowels, kidneys and skin. His whole physical condition and environment are considered with the most minute attention, for the neglect of any detail, no matter how trivial, may make all the difference between success and failure. On the second or third day the first injection is made, 5 to 20 minims of 1 in 2,000 bichloride of mercury, with 8 per cent. chloride of sodium, being the solution ordinarily used. . . . The severe pain which always follows is mitigated by the use of chemically pure chloride of sodium, and by the addition to the injection fluid immediately before use of a few drops of a 1 per cent. atropine solution. Some suffering, more or less acute, is inevitable, but it may be prevented from becoming unbearable by the application of a fomentation immediately after the injection is made." When, after four to six days, the conjunctival oedema has about disappeared, another injection is given. The average number is from four to six injections. If there is no marked improvement in about a fortnight a subcutaneous injection of  $\frac{1}{8}$  to  $\frac{1}{4}$  grain of pilocarpine is alternated with the conjunctival injections. Marked chemosis usually goes *pari passu* with improvement in vision. When this chemosis is absent or ill-marked the strength of the fluid may be increased, either by using Dor's saturated saline, which gives rise to great pain and sickness, or preferably, by adding 1 to 2 per cent. of dionin to the bichloride-

sodium chloride solution, a combination which produces great conjunctival cedema, but much less conjunctivo-bulbar adhesion than the strong saline.

The patient should be a month in bed at the very least, but if after two or three weeks there is no improvement, the case may be considered hopeless. Ramsay's remarks, that as soon as possible the patient should be sent to the country, that occasionally considerable improvement occurs during convalescence, and that attention to the bowels is of the utmost importance, remind us of the fact that other authors have reported spontaneous cures in patients who have gone to a mineral spa (February 1910, page 102).

If we take Ramsay's cases to analysis, we find that 10 showed "a very decided improvement." The word cure is avoided. Five of these relapsed, but in four the relapse did not occur for two years. Of the other five three were satisfactory at the end of a year, and two had disappeared. Allowing the four cases which did not relapse for two years and the three that were all-right after one year to count as 'cures' we should have as our figure 14 per cent. But in his conversation with me the author desired that I should not place the figure above *10 per cent.* In **10 per cent.** of cases Ramsay holds that a good result may be expected by his mixed treatment.

### GENERAL CONCLUSIONS.

To draw useful conclusions from the foregoing very incomplete statistics is extremely difficult; indeed, it is open to question whether it is worth doing at all.

We find authors divided into two classes, the optimistic and the pessimistic, and it seems almost likely that these are, in a measure, the lucky and the unlucky. The treatment of detachment is to a certain extent a game of chance. Those who have been unlucky in their operative treatment may hold that the "pacific" method—as Deutschmann has called it—is just as good as, if not better than, the operative. On the other hand, we find men who have had really large experience of operative treatment in recent years, quite decided in their opinion, in spite of statistics—many of which are vitiated by their age and by the fact of their dating from pre-antiseptic days—that operative treatment is right. It will be noticed that I include subconjunctival injections as operative treatment.

It appears to be the case, if we take statistics alone—and in this I seem to be supported by Wernicke<sup>59</sup>—that there is not a great deal to choose between operative and non-operative treatment. With subconjunctival injections classed as operative, however, the balance is weighed down in favour of operation.

To include such figures as Dransart's 75 per cent. (iridectomy) and Wolfe's 71 per cent. (Wolfe's operation) along with the much lower figures given by everyone else would be manifestly absurd. With reference even to Deutschmann's operation I think it would be unfair to include the author's figures, because, in the meantime, the operation has not been given a fair trial by other surgeons—at least, to the best of my knowledge. Deutschmann's 26.1 per cent. of cures may be left to stand by itself with the very great reputation of the operator behind it.

I shall ask this question: Do ophthalmologists in general consider that the *overhead* percentage of cure by any method is better than 20? I suggest that the answer is in the negative. Let us, then, discard as exceptional and personal to the individual operator—and this seems quite fair, since the individual operator with a high percentage may have some factor of success which is not readily transferable—every percentage by any method which



exceeds 20. If, then, a mean be taken, excluding those above 20, of the percentages which have been given for operative and mixed treatment, it will be found to be **10 per cent.**

This figure, 10 per cent., which represents cures by various operative methods—with the reservations made above—does not take any count of the negative results of some writers, and does not convey any hint of the important fact that, as the result of some operations, patients have been “made worse.”

If, alongside this 10 per cent., we place the more optimistic of the figures for cures of a spontaneous nature, cures which have come about by doing nothing, or by simple rest, atropin, attention to the bowels and diaphoresis, we find, taking a mean of Adamuek's 14 per cent., Horstmann's 4·7 per cent. and Wernicke's 4·2 per cent., that we get **7·2 per cent.** Admittedly this is a high figure; but when we remember that we run no risk of making the patient worse by our own efforts, even a lower figure would not leave a very great *direct* advantage for operative over “*pacific*” treatment.

But there is another point in favour of operative treatment. It must be allowed to have this *indirect* advantage that it creates confidence in the patient that something is being done—indeed, if properly safeguarded, that the best is being done—to alleviate his pitiful condition. There is not the same risk nowadays as formerly in opening an eyeball, if that method be selected, nor of orbital cellulitis if the subconjunctival method be preferred.

Spontaneous cures are sufficiently numerous to allow us to leave the decision to the patient without too much pressing forward of an operation, but, if he leave the matter to us, should we not offer to operate in recent cases where a fair trial has been given of rest in bed, etc., and in old cases where there is any possibility of success?

As to the choice of operation, I may allow what I have already set down about the various procedures to stand without further comment. It is for each surgeon to select that which he thinks best.

My task is finished. I wish it were possible to say it is complete. It has occupied a great deal of time during the last eighteen months, and has afforded an amount of literary study which was certainly not anticipated. If it serve its original purpose of reviving interest in a hitherto unsolved problem, I shall be content.

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- (53) Wood, Casey. — *Ophthalmic Record*, December, 1903.
- (54) Dor, L. — *Soc. française d'Oph.*, 1907. Author's abstract in *Revue Générale d'Ophthalm.*, 1907.
- (55) Deutschmann, R. — *v. Graef's Archiv.*, Bd. LXXIV, S. 206.
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- (58) Dor, H. — *Soc. franç. d'Oph.*, mai, 1907. *Revue Générale d'Ophthalm.*, mai, 1907.
- (59) Wernicke. — Referred to by Deutschmann. THE OPHTHALMOSCOPE, 1907, p. 410.
- (60) Froelich. — *Arch. für Augenheilk.*, XXXVII, 1898. Also *Knapp's Archives*, Vol. XXVIII, 1899.
- (61) Stillson. — *American Journal of Ophthalmology*, 1898.

## CURRENT LITERATURE.

NOTE.—Communications of which the titles only are given either contain nothing new or else do not lend themselves to abstract.

## I.—EXTRACTION OF CATARACT IN THE CAPSULE.

- (1) Smith, Major Henry.—Extract of cataract in the capsule. *Ophthalmic Record*, February, 1910.
- (2) Chaud, Hari.—Malronez's operation. *Ibidem*.
- (3) Vail, Frederick T.—Cataract extraction in the capsule: The Jullundur patient. *Ibidem*.
- (4) Jamison, R.—Extraction of cataract in the capsule. *Ibidem*.
- (5) McKechnie, Captain W. E.—Cataract and Jullundur Smith. *Ibidem*.
- (6) Birdwood, Major G. T.—Extraction of the lens in its capsule. Smith's operation. *Ibidem*.
- (7) Greene, D. W.—The Smith operation, toilette and after-treatment. *Ibidem*.
- (8) Clark, C. F.—The attitude of the profession towards the new operation for the extraction of cataract in the capsule, the so-called Smith-Indian operation. *Ibidem*.

This number of the *Ophthalmic Record* contains a "symposium," by Major Smith and six of his pupils, on extraction of cataract in the unruptured capsule. The articles do not lend themselves to abstract very well.

(1) Major Smith gives a short historical account of the extraction of cataract, as instituted by Daviel, the Pagenstechers, and Malronez.

Malronez's operation is the only one that has any close resemblance to Smith's, but the former, as described—also in this number of the *Ophthalmic Record*--by Senior Assistant-Surgeon Hari Chaud, of Amritsu, Punjab, differs in many respects from Smith's operation. Smith, who has never seen Malronez's operation performed, is of the opinion that, compared with his own, there is a greater danger of loss of vitreous and of septic infection in the Malronez operation.

Smith gives detailed instructions for the selection of cases, preparation for operation, method of making the incision, and the expression of the lens. He enumerates the possible difficulties, and tells how they are to be met; he also gives directions for reposition of the iris and after-treatment, the latter in most cases being apparently almost *nil*.

J. JAMESON EVANS.

(3) Derrick F. Vail (Cincinnati) asks this series of questions, and gives the answers following them:

(1) *Are the natives of India more prone to cataract than our own people?* Yes, owing probably to the effects of the tropical sun and heat and more remote influences, such as heredity, occupation, faulty and insufficient food.

(2) *Do their race and diet predispose to cataract?* The answer is in the negative in each case as they are Aryans like ourselves, and most of them are vegetarians and non-alcoholics.

(3) *Does cataract develop earlier among them than among us?* Yes, on an average about ten years earlier.

(4) *Are their cataracts more simple (less complicated) than ours?* No; on the contrary, complications are more frequent among Indian patients, owing to the prevalence of trachoma, hypermature cataracts, couched or dislocated lenses, and glaucoma simplex.

(5) *What kinds of cataracts prevail there?* The following is a list of 100 consecutive cataract cases:—

Mature cataracts ...	...	...	...	...	48	cases
Immature cataracts ...	...	...	...	...	23	"
Hypermature cataracts ...	...	...	...	...	18	"
Couched (dislocated) cataract ...	...	...	...	...	3	"
Capsular cataract ...	...	...	...	...	2	"
Black cataract ...	...	...	...	...	2	"
Juvenile or congenital cataract ...	...	...	...	...	2	"
Other forms of cataract ...	...	...	...	...	2	"

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(6) *Are they better behaved while being operated on than our own patients?* They are more easily upset by instructions than ours, and consequently Smith has eliminated the patients' equation by always operating without a word of command to the patient.

(7) *Do they behave better after operation than our own people?* There is no nursing in the ordinary sense of the word, so that they behave pretty well as they like. Most of them lie quietly in their beds, others sit up but they are always patient and silent, obedient and docile, even stupid. They are kept in bed for five to eight days more to prevent them going home than owing to any actual surgical necessity.

(8) *Are they more prone to post-operative complications?* No. Although complications are few after the Smith operation, Indian statistics show about the same percentage of post-operative reactions as American in capsulotomy operations.

The reasons for the small amount of post-operative inflammatory reaction in the Smith operations are that nothing of an irritating nature is left behind, and the clean right-angle corneal cut insures speedy union.

(9) *Do they require less care after operation than our own patients?* The Indian expects but little, and consequently is less fretful than the Western patient. They are spared anxiety by having the operation performed immediately they arrive, and by having the eyes left untouched for five days or longer, after the operation. A tranquil pulse and a calm nervous system are counted of greater importance to success than an empty colon and a sterile face and beard.

(10) *Are they easily kept track of after leaving the hospital?* No. This can be easily understood when the class of patient and the distances travelled are taken into consideration. A good record is kept until they leave the hospital. The success of the operation is indicated by ever increasing numbers who come for operation to Jullundur.

(11) *Is Smith inimitable as a cataract operator?* He is a "born surgeon;" he operates on the eye with rare skill and masterful judgment, but "there is no witchery about the operation." Any well-proportioned surgeon who has quiet nerves, good eyesight, good surgical instinct and courage, can, under direct training and guidance of a competent teacher, soon learn to do the operation excellently well.

(12) *Is the operation of extraction of cataract within the capsule as practised by Major Smith better adapted to the Hindu and Mahommedan of*



*India than to our patients?* Vail says: "I believe it is the operation of the future among the best surgeons of the world, regardless of where their fields of activity lie." There is less manipulation required, fewer troublesome steps to consider, nothing left behind to set up complications and retard recovery, healing is prompt and there is no fear of secondary cataract, and, best of all, there is no need to wait months and years until an immature cataract becomes mature, for the operation is singularly well adapted to unripe cases.

J. JAMESON EVANS.

(4) **Jamison** (Belfast) compares the merits of the Smith operation and the ordinary operation with laceration of the capsule and finds the following in favour of the former:—

1. Almost complete immunity from iritis.
2. The absence of an after-cataract becoming denser as time goes on.
3. The ability to deal with cataract at any stage, thus eliminating the long period of anxiety, worry, and possible financial loss which ensues before the cataract ripens.
4. The absence of tags of capsule in the wound which delay healing and lead to the formation of filtering cicatrices, convenient channels for the passage of microbes into the eye.
5. The small amount of after-treatment necessary, as there is neither so much iritis nor the presence of an after-cataract.
6. Better normal results.

Against these advantages we have:—

7. The more frequent escape of vitreous (especially in unskilled hands), but in this connection it must be remembered that if the operation is properly done the number of escapes is but slightly more than in the old operation, while the consequences of such an accident are vastly different in the two cases. In the one, it is complicated with the capsule and probably much of the lens matter remaining behind to cause iritis and iridocyclitis, in the other there is no such complication, and when the patient leaves hospital there is nothing by which one could tell an eye in which such an accident took place from one in which the operation was quite uncomplicated and successful. The investigations of Captain Lister, I.M.S., as published (*Archives of Ophthalmology*, January, 1910), show that uncomplicated escape of vitreous is not followed by any evil consequences.

The results of Jamison's 680 cases, from the point of view of accidents and complications, were as follows:—

Vitreous escapes	...	...	...	...	35
Iritis	...	...	...	...	11
Capsule left behind	...	...	...	...	17
Suppuration	...	...	...	...	4
Expulsive hæmorrhage	.	.	...	...	2

Jamison also insists on the advantages of learning the operation under the instruction of one who is thoroughly acquainted with all its details, and upon the importance of a skilled assistant whose services are only slightly subordinate to those of the operator.

J. JAMESON EVANS.

(5) **Captain McKechnie**, I.M.S. Civil Surgeon, Etawah, India, formerly for three years at Jullundur, describes the development of Smith's operation, the routine of the Hospital at Jullundur and the life led by the patients who attend there; how Smith's fame as an operator for cataract has spread throughout India, and even farther afield amongst a class of patients whose only means of judging of success is by the visual result. His conclusions are that cataract should be extracted in the capsule by every operator who is

competent to do it ; that to become competent a man should be practically taught ; that operators of experience who have condemned the operation have done so owing to a want of practical knowledge of the correct *technique*, and that this knowledge and not peculiarly favourable circumstances at Jullundur is the reason for the superior results obtained by Smith and his pupils.

He gives six references but has forgotten to indicate what they refer to in the text.

J. JAMESON EVANS.

(6) **Major Birdwood**, Principal of the Agra Medical School, describes his experiences in 311 cases of cataract operated on by what he judged from written descriptions was Smith's operation. After seeing Smith operating, he found that the method he had previously adopted was quite different from Smith's. He describes the stages of Smith's operation, and considers that the most essential points in Smith's *technique* are:—

1. That the operator should be sitting down at a table 2 feet 7 inches high and a stool 2 feet high. This gives great steadiness to the hand and body in leaning forward.

2. The incision should be a large one.

3. After the incision and the iridectomy the speculum is removed and the lid is held vertically forwards, the operator then has to bend forward over the right shoulder of the patient and look into the eye over the cheek, and concentrate his attention on the lower edge of the lens and the influence the hook has on the lens.

4. The lens is first dislodged by the point of the hook not by the bend. In some cases the hook is pressed straight downwards and moved from side to side and the lower corneal flap is drawn over the emerging lens like a foreskin over a penis. In some cases the hook is pressed downwards and then drawn towards the feet, the lower corneal flap is thus gently slid under the lower edge of the lens and the corneal flap is used to dislodge it ; the lens then tumbles out lower end first. Major Smith calls these lenses "tumblers"

J. JAMESON EVANS.

(7) **D. W. Greene** (Dayton, Ohio) writes on the toilette and after treatment in the Smith operation, *i.e.*, the means employed after the delivery of the lens (in normal cases) to secure smaller and better located pupils, free from prolapse, incarceration, or entanglement of iris. He emphasizes the importance of making the iridectomy as small as possible by snipping the iris from below at right angles to the section (not parallel with it), and of freeing the angles and smoothing out the iris as thoroughly as possible. (It must not be left closely co-adapted to the under surface of the posterior lip of the section.) He found Knapp's repositor very suitable for this purpose.

A small quantity of ung. hydrarg. oxid flav. is applied to the edges of the closed lids, and both eyes are bandaged. In cases with loss of vitreous it is practically impossible to accomplish anything by attempts at toilette ; such eyes may as well be bandaged up at once, and the updrawn pupil can be brought down later to the centre of the cornea by an iridotomy.

No atropine is used. Medicinally, the remedies are practically limited to blue pill and leeches, but in two cases of iritis where these remedies failed, prompt and lasting relief followed the use of a saline cathartic and sodium salicylate, given according to the plan of Gifford.

J. JAMESON EVANS.

(8) **Clark**, of Columbus, Ohio, remarks that it is somewhat strange that an operation which has been so successfully practised for so many years by Major Smith should not have been adopted by a larger number of ophthalmic surgeons. This indifference is not confined to any particular country, and is equally in evidence in the United Kingdom, America, Germany, and even in India. This attitude is not the result of a judgment founded on extensive

trials, but it has been adopted without anything that could be called adequate investigation. Some of the technical details of the operation are original and not in exact accord with the established methods as seen in the London hospitals, and with their attention riveted on these foibles of *technique* his Indian and English critics seem to have entirely lost sight of the value of his contribution to our knowledge of the great principles underlying cataract extraction and the fact that he has shown us how we may successfully deal with immature cataract.

Others have condemned it after performing a series of extractions in the capsule by a method they conceived from written descriptions to be that of Major Smith, but which in reality was nothing of the sort. It is essential that the details of the operation should be seen and carefully studied, and then carried out in strict accordance with Major Smith's plan, before anyone can express a valid opinion on the value of the procedure. Many failures—reported and otherwise—have been the result of the imperfect *technique* of beginners, or have been due to the performance of "exhibition operations" by competent operators who have been induced to operate away from their accustomed surroundings on cases which they have had no opportunity of selecting and studying, and over which they could exercise little or no control during the after-treatment. But so far ophthalmic surgeons have displayed a great unwillingness to take the trouble to examine evidence without prejudice, and the habit of implicit reliance on old methods and established authorities is so strong with the average English surgeon that a new idea must have great hardihood if it succeeds in obtaining recognition.

Some of the German authorities seem thus far to have failed to grasp the idea involved in the new method, and to insist on confusing it with Pagenstecher's operation, while others reveal the fact that they have had little experience with the method by their solicitude on account of the supposed traumatism to the eye.

Many American surgeons have given adverse reports of the operation and records of recent successes have been received with reserve and without discussion.

The reasons for so many failures are, according to the writer, a general misunderstanding of some of the most important details of the operation as practised in the Jullundur clinic, the adoption of "modifications" of the operation, and a tendency to approach the subject in a spirit that can scarcely be called scientific.

J. JAMESON EVANS.

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## II.—COUCHING FOR CATARACT.

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**Ekamabram, R.—Couchers and their methods.** *Indian Medical Gazette*, XLV, 110, March, 1910.

This appears to be the first eye-witness' description of the native Indian coucher's operation which has been published. **Ekamabram**, of Coimbatore, Southern India, has seen some half dozen operations by different operators. Some remarks are added by Major Elliot to the description.

The wandering quacks who practise both eye-surgery and some rough general surgery in that part of India are said all to come from the one village. They comprise about thirty families, all Mohammedans. Like their fathers before them from time to time immemorial, they practise their craft for a

portion of the year only, before the harvest season, when there is no work to be done on the land. For the rest of the year they are small farmers. They seem to have rather a poor time as surgeons. They have to be constantly on the move, as they have to leave any place quickly after the performance of cataract operations, before the early indications of septic infection begin to dim the lustre of the immediate results. They earn only a very precarious living, and are likely to do worse in the future in this respect, as their hold upon the simple villager is lessening. The fee for a cataract operation may vary from a fowl only up to rs. 50 (£3 5s.) The blood of the fowl is useful to mask the bleeding from the puncture made in the patient's eye. It is needed because the patient is assured that no operation is performed, and that medicine only is applied. Two instruments are used—a sort of lancet and a copper probe. They are kept in a box with the materials for betel-nut chewing. The steel lancet, 2 inches long, without a handle, is hidden in a roll of dirty cotton wool to 2 mm. from its point; and the point is covered with a paste, freshly prepared, before use. The blunt copper probe, 4 inches long, has a piece of thread tied around it 12 mm. from its tip. No local anæsthetic is used. The patient being made to turn his eye well inwards, a scleral puncture is made with the lancet point about 8 mm. from the outer corneal margin, 2 mm. below the horizontal meridian of the eye. The patient cries out, but is assured that "the medicine application" is now completed. The probe is then inserted in the puncture as far as the thread tied upon it. A circular motion is given to the probe to tear the suspensory ligament around the whole of the lens, and then with a gentle downward stroke, the lens is depressed. "The instantaneous effect works as magic on the wondering multitude," and the patient is overjoyed at the moment. Major Elliot estimates the percentage of eyes lost through sepsis as probably over 40 per cent. (see THE OPHTHALMOSCOPE, Vol. V, 1907, p. 193). He thinks that the cataract is attacked from in front by some at least of the Southern Indian couchers, judging from the cicatrices seen in some recent cases and from the accounts of lay observers.

According to Ekamabram, ripe cataracts only are operated upon as a rule. And cases are refused in which the pupillary reaction is not good. But Major Elliot has seen couched eyes with clear evidence of antecedent glaucoma or optic traophy.

H. HERBERT.

### III.—CATARACT OPERATIONS.

- (1) Koster, W. G. zu.—Removal, after seven years, of a lens luxated in the vitreous in the operation for cataract. (Veringdering van een in het glasvocht geluxeende lens na 7 jaar.) *Ned. Tijdschrift voor Geneeskunde*, 1907, II., No. 5.
- (2) Baroggi.—Traumatic cataract. (Della catarata traumatica.) *La Clinica Oculistica*, Maggio, 1907.
- (3) Goebel, C.—A new instrument for treating after-cataract. (Ein neues Nachstarinstrument.) *Zeitschrift für Augenheilkunde*, März, 1909.
- (4) Villard.—Irrigation of the anterior chamber in cataract operations. (Le lavage de la chambre antérieure dans l'opération de la cataracte.) *Ann. d'Oculistique*, T. CXL, p. 241, avril, 1909.



- (5) McKechnie, W. E.—On incision of the eye, with special reference to incisions for the extraction of cataract and for the relief of glaucoma. *Archives of Ophthalmology*, May, 1909.
  - (6) Greene, D. W.—The Smith operation for cataract. *Journal of Ophthalmology and Oto-Laryngology*, July, 1909.
  - (7) Civetta, D.—A case of late intra-ocular hæmorrhage after cataract operation. *Annali di Ottalmologia*, Vol. XXXVIII (1909), fasc. 4.
  - (8) Ortin, Galo Leoz.—The indications for the use of atropine and eserine in the operation of cataract by the combined method. (Indicaciones de la eserina y la atropina en la operacion de cataratas por el metodo de extraccion a colgajo con iridectomia.) *Arch. de Oftal.*, October, 1909.
  - (9) Trousseau.—The cataract operation in advanced age. (L'opération de la cataracte chez le vieillard.) *La Clinique Ophtalmologique*, 10 octobre, 1909.
  - (10) Lister, A. E. J.—The operative treatment of cataract. *Lancet*, 16th October, 1909.
  - (11) Stricker, Louis.—A historical review of the development of the cataract operation. *Journal of Ophthalmology and Oto-Laryngology*, October, 1909.
  - (12) Lister, Capt. A. E. J.—Extraction of cataract in the capsule. *Archives of Ophthalmology*, November, 1909.
  - (13) Reeve, R. A.—The treatment of the capsule in extraction, and afterwards. *Canada Lancet*, December, 1909.
  - (14) Theobald, Samuel.—Summary of results obtained, and features of interest in two hundred and fifteen consecutive cataract extractions. *Johns Hopkins Hospital Bulletin*, December, 1909, and *Trans. American Ophthalmological Society*, Vol. XII, Part I, 1909.
  - (15) Kalt.—On removal of the anterior capsule in cataract operations. (De l'arrachement de la cristalloïde antérieure dans l'opération de la cataracte.) *Ann. d'Oculistique*, janvier, 1910.
  - (16) Birdwood, Major G. T. (I.M.S.).—Smith's operation of extraction of the lens in its capsule. *Indian Medical Gazette*, XLV, 8 (Jan., 1910).
  - (17) McKechnie, W. E., Captain, I.M.S.—A Note on the Technique of Intra-Capsular Extraction. *Indian Medical Gazette*, XLV, 91 (March, 1910).
  - (18) Brown, Samuel Horton.—High myopia with cataractous lens. A case in which simple extraction of the lens in the capsule was necessitated by reason of loss of sight in the fellow eye. *American Journal of Ophthalmology*, March, 1910.
  - (19) Dor, L.—Extraction in the capsule. *La Clinique Ophtalmologique* 10 avril, 1910.
- (1) Koster extracted the lens from the anterior chamber of an eye in which seven years before luxation of the lens in the vitreous had followed an

attempt to extract a cataract. Since that accident the eye had remained quiet. After a time, the patient came again with inflammation of the eye and having his lens in the anterior chamber. After removal of the lens through a linear incision, the eye kept quiet again. G. F. ROCHAT.

(2) As a result of the examination of a large number of cases seen at Pavia, **Baroggi** concludes that while iritis is an almost constant sequel of traumatic cataract, secondary glaucoma is very rare, and sympathetic inflammation is most unusual. As regards the treatment, he advises an immediate operation in all cases. It is however impossible to lay down rules for the method employed in all cases, as the varying circumstances of each will demand varying procedures. On the whole, he gives preference to extraction by flap, combined with iridectomy. HAROLD GRIMSDALE.

(3) Many instruments have been invented and used for treating after-cataract, but none of them is entirely satisfactory. In needling operations three contingencies must be avoided as far as possible. They are: first, extensive openings into the anterior chamber, and consequent loss of the aqueous; secondly, dragging upon the ciliary body in dividing the membrane; and, thirdly, deep penetration of instruments into the vitreous, causing its disorganisation. To avoid large openings into the anterior chamber, needles are generally used, Knapp's, Bowman's, and Stilling's harpoon needles being those best known. The last-mentioned\* are little used, owing to the great difficulty which has been experienced in withdrawing them. These and many other kinds of needles can certainly be used without loss of aqueous, but, even in the double needle operation, there is, of necessity, some dragging upon the ciliary body, and the vitreous must be more or less interfered with. If a thick membrane be divided with de Wecker's scissors, there need be no tearing of the ciliary body or wounding of the vitreous, but a somewhat large incision is involved, and aqueous is lost.

**Goebel**, of Trier, has invented a new instrument which theoretically should be useful, especially where irido-cyclitis has followed the extraction and a tough membrane occupies the pupil. It has the form of a tiny pitchfork; each prong is from 9 to 13 mm. long according to the size of the eye to be operated upon, and the prongs are separated by a distance of 1 mm. to 2 mm. They are straight and have sharp cutting ends. The fork is bent upon the handle at an angle of 110° to 160°. This instrument is introduced from the nasal side of the eye, entering subconjunctivally at the limbus. It is pushed along the surface of the iris till the points reach the pupillary margin, then it is pushed through the iris, under the membrane, and, finally, out again at the opposite side of the pupil into the anterior chamber. A sharp discission knife is entered subconjunctivally at the opposite side of the limbus, and the membrane is divided between the prongs of the fork. The operation, with sharp cutting and well-made instruments, is an easy one, no assistant is necessary, and the results are excellent. T. HARRISON BUTLER.

(4) **Villard**, of Montpellier, is pleased with the results he has obtained in a series of extractions in which he employed irrigation for the removal of cortical *débris* from the anterior chamber whenever the procedure seemed indicated. He used Aubaret's syringe and solution. The syringe has a double action with a single piston and aspirates exactly as much fluid into the part of the tube behind the piston as it expels from the part in front of the piston.† The solution corresponds chemically with the aqueous humour, and consists of distilled water 1,000 grammes, chloride of sodium 0·90 grammes, chloride of

\*For description, see THE OPHTHALMOSCOPE, 1908, p. 970.

†The syringe can be obtained from Luer, of Paris, in a form which can be sterilised by boiling.

calcium 0.113 grammes, and sulphate of potassium 0.221 grammes. The author insists on the risk of causing corneal opacity if antiseptic solutions are used.

R. J. COULTER.

(6) **Greene**, following the practice of Major Henry Smith, discusses the operation for the removal of the lens in its capsule. Smith, with an enormous experience, has a most wonderful and successful record. The advantages of the operation are: (1) extraction of the whole capsule; (2) the highest possible vision of which the patient is capable. The disadvantages are: (1) loss of vitreous, but "if the eyes and vitreous are healthy there is little danger of loss of vitreous in the Smith operation." "I have made 125 operations, and I do not recollect, at this moment, ever having lost normal vitreous. My judgment is that this operation is just as suitable for cataract as the older operation, other things being equal." (2) Detachment of the retina; this depends on the loss of vitreous, and occurs very seldom.

In the discussion that followed the reading of Greene's paper the operation was fully criticised, favourably as well as adversely.

HENRY L. G. LEASK.

(7) On the fifth day after simple and uncomplicated extraction of cataract the patient reported by **Civetta**, of Alberone-Foggia, presented at the same time as an attack of bleeding piles and blood-stained sputum, the anterior chamber of the eye completely filled with blood. No pain: reaction moderate. Under the influence of ergotine (administered by subcutaneous injection), thyroid tabloids (three a day), absolute rest, and a compressive dressing, at the end of thirteen days the upper periphery of the iris began to be visible, and five days afterwards, the pupillary area was free, allowing a clot coming from the fundus and continuous with the hyphæma to be recognised. At the end of a month the clot had disappeared, and a couple of months after the operation, the sight of the eye was 0.5. This very favourable result was probably due to the nature of the hæmorrhage—namely, by disturbance of the general circulation rather than by local vascular changes—and to the fact that at the moment when the bleeding supervened, the wound was already sufficiently consolidated.

A. ANTONELLI.

(8) **Ortin** has always been accustomed to use eserine as a routine measure immediately after all extractions of cataract, even when the combined operation has been chosen. He has been troubled to observe that in these cases, the iris almost always makes firm adhesions to the capsule during the first days, and these adhesions cannot be broken down by the use of atropine later; he, therefore, has lately used atropine immediately after operation in those patients where he has performed iridectomy, and has been pleased to find the results universally good; the pupil has remained free, and there has been no disadvantage. He thinks that this treatment minimises the amount of after-cataract.

HAROLD GRIMSDALE.

(9) **Trousseau's** interesting paper, which deals with the accidents—mainly post-operative—which may occur in connection with cataract extraction in the aged, is well worth reading in the original. The article does not seem to contain any new facts, but places clearly before us those which should be borne in mind when dealing with such cases.

ERNEST THOMSON.

(10) An abstract of **Lister's** paper at the Bombay Medical Congress, February, 1909, will be found in *THE OPHTHALMOSCOPE* of August, 1909.

(11) **Hirschberg's** translation of the writings in Arabic of Ali Ibu Isa (nine hundred years ago) into German is quoted from at length, in English, describing the crystalline lens and discussing the anatomical relations and the physiology of the various parts of the eye.

The evolution of the cataract operation is traced by **Stricker** fully and



most interestingly from these early days and ideas to the ideal operation first put into practice "in far-away India" by "an English army surgeon, not an oculist, Major Henry Smith, of Jullunder, 1,200 miles inland, unhampered by too great technical knowledge or academic discussion." The steps of the Smith operation are described and approved of. HENRY L. G. LEASK.

(12) **Lister** relates his experience of 576 cases operated upon by him in which he extracted the cataract in its capsule. He attributes his low percentage (34) of suppuration cases to the use of the 1:2000 perchloride of mercury douche. No iritis or intra-ocular hæmorrhage occurred. Escape of the vitreous occurred in 5.03 per cent. of the cases, and Lister describes the modification of *technique* necessary to avoid this accident. He estimates the average vision of the healthy eye after operation as 6/6. The resulting astigmatism is +0.75D. to +1.0D. Lister considers the advantage of this method over the usual method very great, but advises an inexperienced operator to spend some time with a surgeon practising this method successfully before beginning it himself. ROSA FORD.

(13) **Reeve**, of Toronto, does not take up the question of laceration of the capsule as ordinarily done, but refers to a method, followed by a small number of operators—namely, removal of a part of the anterior capsule by the capsule forceps. Operations for secondary cataract are less often required after removal than after laceration of the capsule. Thus, Treacher Collins escaped the need of a second operation in 90 per cent. of all cases. For discission, Reeve agrees with Knapp in preferring a straight knife-needle, which should be of the utmost sharpness both in point and edge, for it is intended to cut and not to tear. When thickened membranes or bands obstruct the pupil, other means require to be adopted.

For posterior synechiæ, a small iridectomy is advised, or a simple snipping of the sphincter pupillæ, in the position of selection, by Liier's scissors.

In other cases the best course is bodily removal from the area of the pupil by means of the capsule forceps. As one object of Reeve's paper is to renew attention to a method of treating such cases with the double needle, introduced by Bowman, the latter is quoted in full from Vol. XXXVI of *The Medico-Chirurgical Transactions*, 1853. He does not believe that the opening made by the double needle operation is more liable to close again, than to remain patent, and after thirty years' experience, believes with Bowman that "it is a useful addition to the resources of ophthalmic surgery." He cannot recall a single instance of untoward result or unpleasant reaction, and cites cases in which any other treatment seems hardly feasible. For example, cases of dynamite explosion, where particles of grit are lodged at different points in the iris and capsule or deeper still. Here the double needle will make a useful pupil in the thickened pupillary membrane, with the minimum risk of dislodging the foreign bodies, which should be left *in situ*, or, again, in rare instances of hypermature double congenital cataracts, with capsules so thick and tough that only by the most careful drilling with the sharpest needle can one perforate it. Here a clear central pupil can be safely secured by the double needle method. In the later years of adolescence the use of the capsule forceps enables one to bring away degenerated lenses in their capsules, and thus to clear the pupil entirely, where the cystitome would have failed. Two cases illustrating this latter point are quoted:—1. A lawyer was much annoyed by the noticeable blemish of a white cataract, and requested operation for cosmetic reasons only, as the eye was blind. The pupil was dilated, the iris left intact, and with the capsule forceps a good sized lens in its tough capsule was brought away. A small bead of vitreous and a knuckle of iris presented, and were replaced. Prompt healing took place, and



the result was a black, central, mobile pupil. 2. A bank clerk, with a degenerated and shrunken cataract, in an almost blind eye, had double reasons for wishing interference, since the globe was glaucomatous and the blemish was conspicuous, and likely to prove a bar to promotion. A small iridectomy upwards was done to relieve the glaucoma, and the lens removed by the capsule forceps, the spoon failing. A yellow and albuminoid vitreous escaped. The globe was filled with weak boric acid solution, and the eye healed kindly, looking well. Filling the globe by gentle injection of warm salt or acid boric solution has on different occasions proved useful in Reeve's hands. In one case where the patient had nearly emptied the globe by repeated spasmodic contractions of the orbicularis, this procedure was followed by a most gratifying result, uneventful healing, and recovery of the usual visual acuity. Time did not permit Reeve to discuss "extraction in the capsule," which, he believes, is the only radical method of disposing of capsular and pupillary membranes. Its drawbacks, however, cannot, be ignored.

HANFORD MCKEE.

(14) It is not necessary to detail **Theobald's** experiences, which do not seem to differ much from those of cataract operators in general. Combined extraction is the method of choice. The total failures in the 215 operations numbered seven, or approximately 3.25 per cent. The most interesting of the failures is the case of a negro woman, aged 56 (or older), in whom a smooth operation in one eye was followed in the short period of three weeks, and at the urgent request of the patient, by a smooth operation in the other eye. Some days later the first operated eye became infected, and then the second eye followed suit, and a severe and obstinate iridocyclitis was established in both eyes. Tension fell, and vision was reduced to light perception. The author remarks, "That a condition closely akin to sympathetic ophthalmitis was established in this case seems altogether probable, and I feel sure that two successful operations were spoiled, because so brief an interval was allowed to elapse between their performance."

ERNEST THOMSON.

(15) In operating for cataract, **Kalt** prefers removal of part of the anterior capsule to discission. He uses a forceps having semi-circular teeth with the convexity towards the lens mounted on arms with a double curvature adapted to the shape of the eye. He has used the instrument in 100 cases, and finds that with it he has fewer after-cataracts, and the average vision of his patients is higher.

R. J. COULTER.

(16) **Major Birdwood** published his experience of 311 intracapsular extractions in the *Indian Medical Gazette* of June, 1906 (see *THE OPHTHALMOSCOPE*, Vol. V (1907)). He operated by what he thought was Smith's method, working from Smith's published account; but owing to the very large percentage of vitreous losses met with, 35 per cent., he was forced to give up the method for a time. He has recently paid a visit to Jullundur, and was astonished to find that he had not been operating by Smith's *technique* at all. Though he thinks it necessary that the details should be learnt from Major Smith, or from one of his disciples, in order that the operation may be successfully performed, he endeavours in this paper to point out the essentials. The following abstract is mainly supplementary to the description given on pp. 566-567, of *THE OPHTHALMOSCOPE*, Vol. VII (1909). "The operator must be sitting down on a stool 2 feet high, behind the patient's head. The patient is on a table 2 feet 7 inches high. This is important, as it gives the operator great steadiness of hand compared with that obtainable in the standing position." The incision must be large, corresponding with nearly half the circumference of the cornea. "It is commenced slightly behind the sclero-corneal junction and brought out slightly in the

cornea." An ordinary speculum is used during the incision and iridectomy. The special means of controlling the lids (*see* p. 566, Vol. VII.) during the expression of the lens is illustrated by two figures. Smith attaches great importance to the method by which the assistant elevates the upper lid. "The operator then leans well over the right shoulder of the patient and looks at the globe over the cheek. He takes a strabismus hook in his right hand

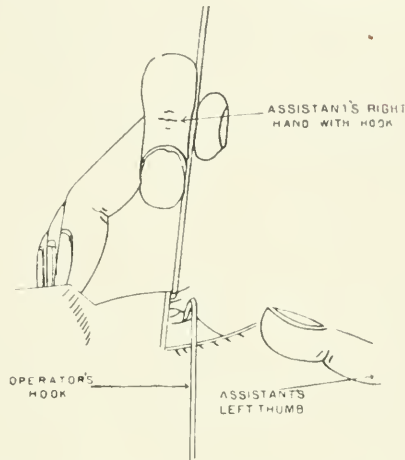


Fig. 1.—Method of elevation of the lids in Smith's operation, seen from right side.

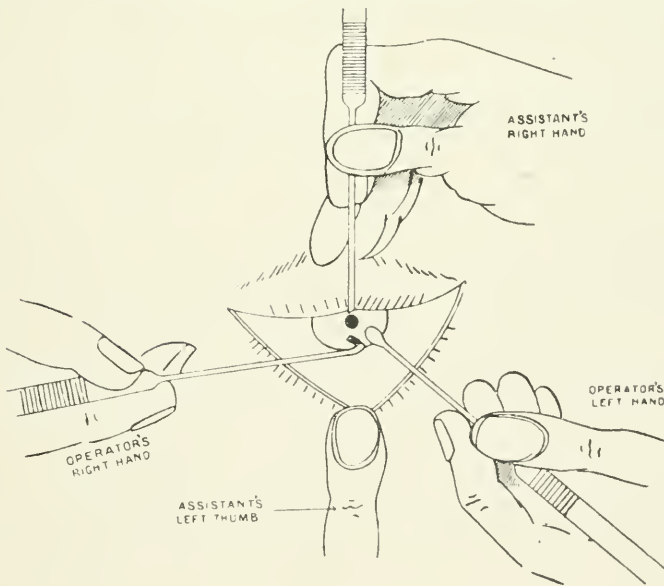


Fig. 2. — Smith's operation.

and places the point on the cornea over the point where he thinks the lower edge of the lens is. Pressure is made at first downwards and then from side to side and backwards and forwards, keeping up the downward pressure gently until the edge of the lens appears in the gaping wound. The spoon, sometimes held in the left hand, is placed on the cornea beside the hook and used

to steady the lens and keep up the tension at one side, while the point of the hook increases the tension at the other side. Often the hook alone is sufficient to expel the lens. Sometimes, by drawing the point of the hook towards the feet, the corneal incision is made to gape and the corneal flaps can be drawn over the lens like a foreskin over the penis. Sometimes the lower corneal flap can be drawn downwards by the point of the hook and then gently pressed under the lower edge of the lens as it is emerging, so that the lens emerges lower end first. These cases Major Smith calls "tumblers."

Since returning from Jullundur, Major Birdwood has performed 35 extractions with four escapes of vitreous. He would not have written this paper without further experience were it not that he expects to be transferred, and to be, therefore, unable to operate again for some time.

H. HERBERT.

(17) **Captain McKechnie** writes that the diagrams illustrating Major Birdwood's paper do not show the correct position of the assistant's right hand.

"In the position shown, the wrist and forearm of the assistant, being more or less horizontal, occupy the space in nature required for the operator's left arm and hand, rendering accurate technique on the surgeon's part impossible; moreover, owing to the cramped position of the assistant's hand he loses control of both lid and eyebrow. The position shown in Major Birdwood's diagram is the one which the assistant naturally adopts, and hence it is probably the cause of failure on the part of so many surgeons.

"The correct position is one in which the assistant holds the right forearm, palm and fingers vertically at right angles to the horizontal patient, and with the palmar aspect of the palm and fingers looking towards the patient's feet. The handle of the hook should lie along the palmar aspect of the index, and the backs of the nails of the other fingers should rest on the superciliary ridge and forcibly keep the muscles of the eyebrow on the forehead. The index should be able to move freely to guide the hook as required, the hook being held between the index and thumb. The wrist should be flexed, not extended.

"Any one who will try this position will find that it is one requiring practice. The success of the surgeon will depend on his being able to make his assistant acquire it."

H. HERBERT.

(18) **Brown's** case is sufficiently abstracted in the title. The operation was performed by Webster Fox and was quite successful. ERNEST THOMSON.

(19) This article by **Dor**, of Lyons, is an excellent summary of recent articles on the subject of Smith's operation, especially those which have appeared recently in the *Archives of Ophthalmology* (November, 1909) and the *Ophthalmic Record* (February, 1910). The writer is evidently an admirer of Smith's personal character and of his operation as described by those who have made the pilgrimage to Jullundur. "Major Smith, of Jullundur, ignoring the discussions which took place in Europe regarding extractions in the capsule, and unaware that this operation had been condemned, or rather that its partisans were few in number, was led by chance circumstances to operate in this way. . . . Is Jullundur to become a place of pilgrimage for ophthalmologists? In all probability, Yes." And again: "We pass on the torch of science. We labour to imitate our masters. We became accustomed to this or to that operation, and we bring to the *technique* which we adopt only a very feeble personal co-efficient. It is a good thing sometimes to have no traditions and to go our own way."

ERNEST THOMSON.

#### IV.—MISCELLANEOUS COMMUNICATIONS DEALING WITH CATARACT.

- (1) Jessop, Walter H. H.—Aniridia and cataract of both eyes. *Transactions Ophthalmological Society U.K.*, Vol. XXVIII, 1907-8.
- (2) Nettleship, E.—Additional cases of hereditary cataract. *Royal London Ophthalmic Hospital Reports*, Vol 16, Part 4.
- (3) Scalinci, Noé.—On the relation between cortical cataract, beginning with subcapsular equatorial opacities and diseases of metabolism. A preliminary note. (Sul rapporto fra la catarata corticale iniziata con opacimenti sotto-capsulari ed equatoriali e le malattie del ricambio.) *La Clinica Oculistica*, Oct., 1908.
- (4) Kipp, Charles J.—A case of congenital coralliform cataract of both eyes. *American Journal of Ophthalmology*, August, 1909.
- (5) Burge, W. E.—Analyses of the ash of the normal and cataractous lens. *Archives of Ophthalmology*, September, 1909.
- (6) Adams, P. H.—A family with congenital opacities of lenses. *Transactions Ophthalmological Society U.K.*, fasc. 3, 1909.
- (7) Fisher, J. H.—A case of unusual cataracts, bilateral, in a girl. *Transactions Ophthalmological Society U.K.*, fasc. 3, 1909.
- (8) Harman, N. Bishop.—New pedigrees of cataract—posterior polar, anterior polar, and lamellar cataract. *Transactions Ophthalmological Society U.K.*, fasc. 3, 1909.
- (9) Mawas, J.—Contribution to the study of the pathogeny of cataracts in general, and of senile cataract in particular. Lesions of the ciliary body in senile cataract. *Revue Générale d'Ophthalmologie*, 30 novembre, 1909.
- (10) Hudson, A. C.—A clinical study of posterior traumatic cataract. *Royal London Ophthalmic Hospital Reports*, January, 1910.
- (11) Bonsignorio, Doctoresse.—On the resorption of simple senile cataract. *La Clinique Ophthalmologique*, 10 janvier, 1910.

(1) The case of aniridia with anterior polar cataract in both eyes, complete dense lens opacity of right and lamellar opacity of left, shown by Jessop, of London, brought out the opinion from E. Treacher Collins that cases of congenital aniridia are predisposed to cataract, and that anterior polar cataract is not always secondary to corneal ulceration but may be congenital. Collins also remarked that he had seen a case of aniridia in which fairly extensive lens opacities were confined very much to the periphery. It looked as if the opacities of the lens were compensatory of the iris defect.

ERNEST THOMSON.

(2) In this paper Nettleship (Hindhead) records several new cases of heredity in cataract development. His previous paper on this subject was published in Vol. 16, Part 3 of the same *Reports*. Some very complete family histories are here given.

C. DEVEREUX MARSHALL.

(3) Scalinci thinks most so-called senile cataracts are really connected with some acid condition of the blood, and he explains the appearance



of opacities by the fact that the proteid of the lens is in the shape of alkali-albumen, and therefore is precipitated by acids; the reason that these opacities appear chiefly in the posterior and equatorial cortex is that the contents of the blood are no more readily diffused into the vitreous from the choroidal vessels, than into the aqueous from the ciliary vessels; the chemical reactions, therefore, are more marked in those parts of the lens in contact with the vitreous. He has tried to verify his hypothesis by injecting quantities of acids into the blood of animals, but so far without success. He would call these cataracts "dyscrasic" and reserve the term, "senile," for the sclerotic form only.

HAROLD GRIMSDALE.

(4) **Kipp** (Newark, N. J.) describes a case of coralliform cataract in a boy, aged 10 years. He has been unable to find a description of a similar case in American literature, and therefore he has naïvely reproduced the picture of Gunn's original case from the *Transactions of the Ophthalmoscopic (sic!) Society of the United Kingdom*. The patient was thin and puny, had no definite signs of rickets, had no family history of eye disease except near sight in one great-grandfather, had no marked dental abnormality, had had no convulsions; his parents were not blood relations; his sight had always been defective, and was not improved by glasses. The cataracts were needled and then evacuated. The lens-matter contained much cholesterin, when examined microscopically immediately after removal. V.A. +1.5 D. = 6/8 in each eye.

ERNEST THOMSON.

(5) In these analyses **Burge** has used, for the study of the normal lens, the small number of normal human lenses available, supplemented by pigs' lenses. The percentage of ash in the pig's lens is identical with that of human lenses, and its composition is also apparently the same.

Burge concludes from his experiments: (1) that there is a decrease of potassium in the cataractous lens, from 38.8 per cent. of the ash in the normal to 9.8 per cent. in cataract; (2) the calcium in the cataractous lens increases from an almost negligible quantity in the normal to 12.5 per cent. in cataract; (3) in cataract, the magnesium increases from 1.2 per cent. to 8.0 per cent. (except in Indian cataractous lenses); (4) sodium is increased to the same extent as potassium is decreased, *viz.*, from 6.67 per cent. to 25.06 per cent.

ROSA FORD.40

(6) The family tree described by **Adams**, of Oxford, of hereditary stellar cataract, shows ten cases out of twelve individuals studied, from the great-great-grandfather (by repute cataractous) and the great-grandfather to the youngest child, aged three and a half years. For a description of the cataracts the original should be consulted.

ERNEST THOMSON.

(7) **Fisher's** patient, a girl of 12, when first seen in October, 1907, presented a circular dot of opacity at the posterior pole of each lens, with a little general want of clearness and about six radiating cortical striæ at symmetrical intervals. The cataracts progressed, and are now considered to be a variety of the coralliform type.

ERNEST THOMSON.

(8) The cataract family described by **Harman**, of London, must be studied in the original. The pedigree covers about fifty individuals. In the affected branch ten individuals out of twenty-two were affected in three generations.

ERNEST THOMSON.

(9) **Mawas**, of Lyons, first gives a short bibliography (in which no British name appears) of the work already done. He then describes the anatomical findings in an eye removed on account of sarcoma of the choroid from a patient aged 68, in which there was incipient cataract. The author considers this cataract to be a senile cataract. Clinically, the aqueous, vitreous, and ciliary body were normal. The eye was opened immediately after excision

and prepared *secundem artem*. Lesions of the ciliary body and pars ciliaris retinae were found. The former was in an advanced stage of sclerosis, the latter presented vacuolization of the epithelial protoplasm and of the nuclei. The following is the sequence of events—according to Mawas—in the formation of a cataract: (1) lesions of the ciliary body, general (naphthaline, tetanus, diabetes, etc.), or local (light, heat), cause degeneration of the pars ciliaris; (2) an abnormal aqueous is secreted; (3) alteration of the capsule and of the epithelium of the lens, followed by the formation of cataract.

ERNEST THOMSON.

(10) The crystalline lens being normally transparent, is a favourable tissue for the study of changes in its substance, although somewhat complicated by the readiness with which it becomes opaque after injury. But little has been published on the subject, says **Hudson**, of London. Some of the detailed cases described are due to needling, some to accidents, others to concussion injuries, and others, again, are unclassified traumatisms. Altogether, forty-four cases are described and many are illustrated.

Within a few hours of the injury, feather-like opacities appear in the region of the posterior surface of the lens, and are first seen in the central region, whence they tend to extend towards the periphery and to become continuous with a fringe of short, radial striæ. A little later, vacuoles appear between the rays, and then peripheral striæ. These changes gradually alter their shape and appearance until finally all that remains is a collection of fine granules which may by their arrangements afford some suggestion of the antecedent stellate figure.

Attempts have been made to explain these changes on the theory that they follow distension of the lymph channels; but the behaviour of the changes is against it, while Leber's researches show that the existence of lymph channels either in the capsule or between the lens fibres is in the highest degree improbable.

Neither is it likely that these patterns are due to a collection of fluid between the lens fibres. It is far more likely that they are caused by a swelling of the retinal lens fibres, and the dark lines seen with transmitted light are the result of different conditions of refraction. The lace-work patterns would result from irregular swelling of the fibres and alterations in their protoplasm, and when these coalesce the more open-work patterns would appear. The later stages of discrete vacuoles would result from a subsequent partial absorption of fluid, absorption would account for the final changes in the residual lens fibres.

It follows that the prognosis, both immediate and remote, in a case of traumatic cataract should always be guarded; one can never tell what may happen, and in every case which has developed posterior lenticular changes the lens should be regarded as a damaged structure which is very susceptible to deleterious influences.

C. DEVEREUX MARSHALL.

(11) According to **Bonsignorio**, the resorption of actual simple senile cataract is rarer than is supposed. Many of such cases are not senile cataract at all, but secondary cataract due to grave affections of the eyeball. The authoress holds that the resorption of lens *débris* remaining for any reason after the extraction of the nucleus is illusory. References are made to literature regarding resorption of senile cataract, or of cataract considered senile. Having had occasion to operate on both eyes of five patients residing in the Alps, in some of which the cataract was hypermature, Bonsignorio relates the interesting experience that in each case where the cataract was over-ripe, there was spontaneous and sudden expulsion of the cataract in the capsule immediately after completion of the section. The simple pressure of the knife on the eyeball was sufficient to rupture the degenerated fibres of the

zonule. The cataract was ejected without previous issue of vitreous, though a small quantity always followed the expulsion of the lens. In conclusion, the authoress seems to be in favour of not operating on immature cataracts. We must recognise, she says, that in spite of large sections (*lambeaux*), combined extraction, and careful toilette of the pupillary region, secondary cataracts are very frequent. Antiseptics and the perfection of operative *technique* can but assist Dame Nature, an encounter with whom may easily result in our defeat.

ERNEST THOMSON.

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## V.—MYOPIA.

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**Eales, Henry.**—Myopia. *Birmingham Medical Review*, February, 1910.

As the subject of the Richard Middlemore Lecture for 1909, myopia was chosen by the lecturer, **Henry Eales**, of Birmingham. The lecture is essentially one for post-graduates, and hence need be abstracted at any great length in THE OPHTHALMOSCOPE. One or two points, however, will repay consideration.

It is now admitted by almost all writers that myopia is very exceptionally congenital. Myopia, as a rule, is recruited from eyes originally hypermetropic. The most important factor in the causation of myopia is a lack of power in the sclera to resist intra-ocular tension, and as myopia, although not congenital, is often hereditary, this want of power must often be hereditary, and is very probably congenital in origin. What is the connection between use of the eyes for near work, on the one hand, and the presence of myopia, on the other? There are several theories.—1. Accommodation, supposed to increase the intra-ocular tension, has been held responsible. 2. It has been thought that the intra-ocular tension is raised by the pressure brought to bear upon the globe by the extrinsic muscles of the eye during the act of convergence. On this view, the posterior pole of the eye is particularly prone to distension owing to its absence of muscular support. 3. Distension of the posterior pole of the eye has been thought to be due to traction by the optic nerve, a necessary consequence of convergence. A congenital shortness of the optic nerve has been presumed. 4. The recti and oblique muscles, it has been supposed, in contracting press upon the *venæ vorticosæ*, and thereby obstruct the outflow of blood and lead to intra-ocular congestion and distension of the eyeball. 5. Some still believe, as did von Graefe, that a true sclero-choroiditis is present, softening the sclera, and causing it to yield.

Eales concludes that conditions which cause the patient to look closer than normal must contribute to produce or to increase myopia. Poor lighting, by causing a child to get unduly close to his work, becomes an important factor in causing an increase in myopia. The author lays stress on astigmatism as of great importance in the production of myopia. Other factors are corneal opacities, congenital cataract, and, indeed, anything that causes approximation of work to eyes.

The reduction in vision, without ophthalmoscopic changes, sometimes seen in commencing myopia, is to be accounted for by ultra-ophthalmoscopic changes, molecular or nutritional changes in the cones, or by a spacing-out of the structures in question. The earlier myopia commences, the higher is it likely ultimately to become. But progress is often irregular, and is frequently connected with excessive reading, especially under a bad light or soon after a general illness.



With regard to the provision of spectacles, Eales prescribes glasses for reading even where the myopia is 2 D. or less. He makes an exception only in cases where vision is much reduced—say, below  $\frac{1}{12}$  or  $\frac{1}{16}$ . Under these circumstances, such children must look closer than others whose sight is normal, in order to see the print, and so be forced to employ more than the usual amount of accommodation if wearing fully correcting glasses. In such cases if myopia is not more than 2 D. Eales prescribes no glasses to be used for reading. On the other hand, if the myopia amounts to more than 2 D., he orders glasses which leave 1 D. or 2 D. of myopia uncorrected.

Lighting must, of course, be good, and the child must be placed correctly with relation to the window or windows. Any tendency to stoop over work must be carefully avoided, since this increases the liability to intra-ocular congestion. Six years of age is early enough for the myope to begin schooling, and particular care must be taken not to over-work such children.

Speaking of the various complications of myopia, Eales incidentally mentions a couple of cases where a detached retina spontaneously recovered. In neither instance did the amount of myopia exceed 6 D. In his experience, under such conditions recovery occurs only once in about one hundred cases. On several occasions Eales has seen convergent strabismus with hyperopia as a cause, which later in life presented the rather unusual association of convergent strabismus with myopia, the refraction having changed in the interval. He thinks that this may furnish the explanation of all cases of convergent strabismus with myopia.

Eales concludes an eminently readable and practical communication with a series of aphorisms dealing with the prevention of myopia. He advocates the formation of special schools for the education of children suffering from high myopia and reduced sight. Finally, he expresses a most guarded opinion as to the advisability of removing the crystalline lens from highly myopic eyes. His own limited experience of that procedure rather confirms the view that operations upon myopic eyes are prone to be attended with serious disasters, especially with detachment of the retina.

SYDNEY STEPHENSON.

## VI.—TRAUMATIC PARALYSIS OF THE SIXTH NERVE.

**Vigier.**—The pathogeny and prognosis of traumatic paralyses of the sixth nerve. (*Les paralysies traumatiques du moteur oculaire externe : leur pathogénie et leur pronostic.*) *Recueil d'Ophthalmologie*, décembre, 1907.

**Vigier** describes five possible traumatic lesions of the abducens, *viz.*:—  
 (1) At its nuclear origin—hæmorrhage or disturbance of the cerebro-spinal fluid—according to Durat's theory. (2) Fracture of the petrous temporal—a slight osseous displacement from fissure, splinter, or callus, being enough to cause section, elongation, or compression of the nerve as it lies on the sharp edge of the bone. The eighth is often implicated at the same time and on same side. (3) Pressure by a traumatic carotid aneurism. (4) Fracture of the lesser wing of the sphenoid and tearing of the dura mater with rupture or elongation of the nerve. (5) Concussion in the orbit. As paralysis of the sixth is often a concomitant of a fractured base, the prognosis is generally regarded as unfavourable. Vigier finds that a pessimistic view is unwarrantable in many cases. More particularly is this so in cases due to concussion



of the orbit. He records five cases of this type. The paralysis in three cases was the result of a blow on the temporal region on the side of the paralysis. The fourth was due to a blow on the eye from a stone, and the fifth was apparently due to the strain of lifting a beam. All made a rapid recovery (within 15 to 20 days); two without treatment, and three by treatment with sodium iodide, nux vomica, and electricity. The author's views are somewhat vague as to the immediate lesion causing the paralysis. A retrobulbar hæmorrhage is improbable, as there were no suggestive associated symptoms (ecchymosis, exophthalmos, &c.) Concussion of the nerve seems more feasible, as the nerve in its orbital part is very sensitive to physical agencies, *e.g.*, cold or heat. The absence of all signs of a cranial or cerebral lesion also suggests an orbital lesion alone.

J. JAMESON EVANS.

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## VII.—A FORM OF CONJUNCTIVITIS.

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Doyne, R. W.—A description of a form of conjunctivitis. *Trans. Ophthalm. Society U.K.*, Vol. XXX, Fasc. I, 1910, p. 85.

The form of conjunctivitis described by Doyne, of London and Oxford, is characterised by attacks of acute inflammation, which are accompanied by pain and by great irritability of the eye, and which last from six to twelve days. The attacks, which may occur at frequent intervals, appear to be excited by exposure to sun, wind, glare, or draught. The condition, Doyne thinks, is due to an infected condition of the Meibomian glands, the secretion from which is distempered in various ways. Thus, thick and putty-like material may be squeezed from the ducts, but a more typical appearance "is of purulent appearance or a free, limpid, straw-coloured discharge, some glands showing one condition and some the other." In almost every case, however, pure cultures of the staphylococcus aureus can be obtained from the Meibomian ducts.

A chronic form of the disease is much commoner, and Doyne surmises that it is often present in cases classed as examples of "chronic conjunctivitis" and "marginal blepharitis." It is to be noted that the glands mainly affected are those which belong to the outer part of the lower lid.

In the way of treatment, Doyne squeezes out the secretion from the Meibomian glands periodically, injects a vaccine prepared from the patient's staphylococci, and applies argyrol to the affected eye.

SYDNEY STEPHENSON.

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## VIII.—AN OPERATION FOR EXPOSING THE BASE OF THE BRAIN.

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Löwe.—Further communications with reference to the exposure of the optic chiasma, the hypophysis, and the interior pontine region. (Weitere Mittheilungen zur Freilegung der Sehnerven Kreuzung, der Hypophysis, und der vorderen Brücken Region.) *Zeitschrift für Augenheilkunde*, Mai, 1909.

Löwe, of Berlin, who is a rhinologist, read the paper which forms this communication before the Berlin Ophthalmological Society. He has previously written an article in the *Zeitschrift für Augenheilkunde*, Bd. XIX,

p. 456, which detailed a new method for exposing the base of the brain and removing tumours of the pituitary body. The article was illustrated and made the procedure clear. The nose is split and reflected to right and left. The turbinals and ethmoid cells are removed, and the septum reclined or resected. The conchæ sphenoidales (Ossicula Bertini) are resected and the sphenoidal sinus exposed to full view. The next stage is to take away the septum and convert the two sphenoidal sinuses into one cavity. It is finally only necessary to chisel away the roof of the two sinuses to expose the chiasma, the hypophysis, and the anterior pontine region. The operation has been performed seven times upon the living. The author now describes a simpler means of exposing the region. He suggests that the mucous membrane be reflected from the roof of the pharynx exposing the body of the sphenoid. This need only be cut away to expose the sphenoidal sinus and the hypophysis. The roof of the pharynx can be attacked by a variety of methods. V. Rüdiger Rydygier in a paper on the subject (*Wiener Klin. Wochenschr.*, 1908) mentions no fewer than twenty-one. The usual method is v. Langenbeck's temporary resection of the upper jaw. Another operation traverses the hard palate. A third divides the soft palate (Gussenbauer). Yet a fourth proceeds *via* the sulcus alveolo-lingualis. A simpler method is median pharyngotomy, devised by Malgaigne, and improved by Jeremitsch and others.

The last portion of the paper deals with the anatomical variations found in the neighbourhood of the sphenoidal sinus, but we should naturally turn to the epoch making research of Onodi to obtain a mastery of the anatomy of the region under consideration. Three types of basi-sphenoid are found. In the first, the pneumatic cells reach to the sella turcica. In the second, they are found as far as the posterior border of the sella turcica; and in the third the cavities are found behind the hypophysis. In each case the relations of the sinus are different.

Fortunately, these heroic operations hardly fall in the province of the ophthalmic surgeon, for the problematical cure would be almost worse than the disease.

T. HARRISON BUTLER.

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## IX.—THE ACCESSORY SINUSES.

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- (1) van der Hoeve, J.—Disease of the optic nerve in affections of the accessory nasal cavities. (*Ziekte van de gezichts-zenuw by ontsteking van de by-holten van den neus.*) *Nederlandsch Tydschrift voor Geneeskunde*, 1908, p. 1,089.
- (2) Detwiler.—Diseases and disturbances of the eye induced by diseases of the nose and its accessory sinuses. *Journal of Ophthalmology and Oto-Laryngology*, September, 1909.
- (3) Krauss.—A case of monocular hemianopsia due to ethmosphenoidal disease. *Ophthalmic Record*, January, 1910.

(1) van der Hoeve observed two cases of retrobulbar neuritis due to inflammatory processes in the ethmoidal and sphenoidal sinus. The cases offered no particularities as to their course; they were operated upon by a nasal surgeon, after which recovery appeared very slowly and was incomplete. But the author observed a symptom which may prove of value in the early

detection of similar cases. On taking the field in an early period of the disease, no central scotoma was found, but the author was struck by the appearance of a marked enlargement of the blind spot for colours only, its outline being normal for white. In a large number of normal persons the outline of the blind spot for white and for colours was found to be identical. Later on, the central scotoma of axial neuritis made its appearance. After this observation, it appears advisable to examine the blind spot with the perimeter in every case where a neuritis from disease of the nasal cavities is suspected, when no other changes in the field can be found.

G. F. ROCHAT.

(2) **Detwiler** (Texas), reports four cases bearing on this subject, not because they are rare, but because they are types of various ocular lesions due to nasal and sinus diseases.

CASE 1.—A man aged 70 years. Complains of diplopia, the right eye and the abductor of this, the muscle at fault. A fleshy mass in the upper part of the right nasal cavity and indications of involvement of the right frontal sinus, the presence of pus in the nose, and tenderness on percussion over the sinus. Removal of the mass was attempted under cocaine, unsuccessfully. Death three or four days after, meningitis having set in.

CASE 2.—Man aged 33 years. Complained of pain about the left eye and double vision, exophthalmos, and general restriction of the movements of eye. Pupil infiltrated, and did not react to light or accommodation V.A.R.  $\frac{6}{6}$ , V.A.L.  $\frac{6}{10}$ . Treatment of the intra-nasal condition, with the happiest result.

CASE 3.—Woman, aged 25, complained of much pain about the eyes. Careful correction of the refraction under atropine did not relieve, and the patient was referred, and again referred, to the rhinologist and neurologist until eventually a sphenoid sinus empyema was discovered and effectually dealt with. The difficulty in diagnosis is insisted on.

CASE 4.—Woman, aged 28. History of discharge of pus from the nose and tenderness over the left antrum of long standing. Left frontal sinus also involved, but nothing surgical done for this, as drainage was satisfactory. The diseased antrum was opened through the canine fossa, a large polypus removed, the cavity curetted and flushed. Some weeks later, the patient spoke of failing vision, with cloudy vitreous, and this condition did not clear up. The treatment adopted, however, relieved the pain in the eyes. The subject is discussed at some length and many authorities are quoted.

Surgical treatment is the rule, although in a few cases local treatment with adrenaline and cocaine may be of benefit. The subject is one of interest and importance to the ophthalmologist. A mature examination of the nasal cavities is called for, and the ophthalmologist must qualify himself to do this thoroughly unless he can have the services of a rhinologist.

HENRY L. G. LEASK.

(3) In the case reported by **Krauss**, of Philadelphia, there had been chronic sinusitis for some years, with intense headache and depression of spirits latterly. The turbinates were removed and the ethmoidal cells cleared out with considerable relief, but purulent discharge continued from the frontal and ethmoidal cells, and four months later, the patient had a transient relative scotoma in the right eye. Six weeks later, it reappeared and extended until the upper half of the right field was lost. It was found that a large posterior ethmoidal cell encroached upon the sphenoidal sinus. The former was opened, but no great amount of pus was discovered at the time of operation. The anterior wall of the sphenoidal sinus was removed and a small amount of pus evacuated. When the packing was removed twenty-four hours later, there was a very offensive odour and pus poured from the spheno-ethmoidal region and continued to do so for ten days, when it gradually subsided. A fortnight after the operation, the patient had recovered all but the upper nasal quadrants of the field. A month later, the field again contracted a little and a small scotoma appeared owing to obstruction of the opening in the sphenoid by swollen mucous membrane and granulations. When the latter were removed and the opening enlarged, sight was restored to nearly its normal state.

J. JAMESON EVANS.

## OPHTHALMOLOGICAL INSTRUMENTS

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E. B. MEYROWITZ,

LONDON, PARIS AND NEW YORK.

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The above instruments are briefly described below—further information will be gladly given upon application, or, by arrangement, they can be obtained upon trial.

(1) The new and revised edition of Dr. Edridge-Green's book, *Colour Blindness and Colour Perception* is now on sale and can be obtained from us, price 5s. 4d., post free.

In view of the rapid strides into professional favour that Dr. Edridge-Green's theories of colour vision are making, no ophthalmologist can afford to be without his latest book on the subject.

(2) We have recently devised a smaller model of our socket current controller, and have produced a cheaper form which is suitable for illuminating surgical lamps taking under one half ampere only. As most lamps used in ophthalmological instruments are included in this limit of current consumption this controller should find a ready demand from surgeons using such small lamps. To obviate the danger of burning out very small surgical lamps through inadvertently switching on the main current without knowing what voltage will be available at the secondary terminals, a scale and indicator has been fitted on the front of the instrument which shows at a glance what the strength of the low voltage current will be, and also enables the rheostat to be set immediately to suit any given lamp once the position of the pointer on the scale is known. The instrument is so small that it can be comfortably carried in the pocket, and it can be used on any electric light supply by simply taking out a lamp from a holder, substituting the rheostat, and replacing the lamp in the holder provided on the rheostat.

(3) As we have lately been asked many times for a small rheostat which would enable a surgeon to take an accumulator from his automobile and use it for cautery, in place of being compelled to carry a special battery for the purpose, we have designed a tubular rheostat which we have found to answer perfectly on any battery giving not more than four volts. The resistance wire is wound on a vulcanised fibre core which fits accurately into a metal tube; this makes a perfect contact all round the resistance coils and not in one point only. The tube is slipped over more or less of the core according to the amount of resistance required in circuit, and when it is closed up it protects the wire in a perfect manner. The overall dimensions are 5 in. long by  $\frac{3}{4}$  in. diameter when closed. It works perfectly with our special pocket cautery batteries and when supplied with one of these is fitted with a connector which screws directly on to one of the battery terminals. The price has been fixed at twelve shillings and sixpence.

(4) Illiterate Test Chart (Dr. F. B. Seitz) is made up of figures of common objects familiar even to the young, every one of which can be



described in a word of one syllable. The figures are in outline, without shading or perspective, and are according to the Snellen basis. In these respects the chart is new; and its usefulness in testing illiterates, particularly children, is attested by the failings of many of the present charts.

(5) A new Phoro-Optometer with Spherical Lens Attachment. This new instrument is our well-known Phoro-Optometer with the addition of a binocular triple series of plus and minus spherical lenses mounted in light disc form. It is exceedingly compact and complete, being at the same time unusually light and well finished.

The lenses are all one inch in diameter, are burnished in their cells, and may be brought into operative position separately or in combination as desired. The first disc contains 0, .25, .50, .75, 1.00, 1.25, 1.50 and 1.75 in plus spheres; the second disc carries the same number in minus, while the third holds the auxiliary numbers, and by a partial rotation outward from zero, .12, 2. and 4. in plus are obtained, while an inward movement from zero gives .12, 2.00, 4.00 and 6.00 in the minus. By combining the contents of the first disc with the positive auxiliary numbers in the third, all of the positive equivalents from .12 to 1.87 are obtainable in eighths, and from .25 to 5.75 in quarters. The negative equivalents are likewise obtained by employing the second disc in conjunction with the minus auxiliaries carried by the third; but in the minus numbers the range is extended to 7.75.

The discs carrying the lenses are about  $4\frac{1}{4}$  inches in diameter; they are rotably mounted three on either side of the instrument and are individually provided with sensitive spring stops for locating each lens as it is brought into operative position at the sight opening. The edges of the two outside discs are turned slightly outward to permit free manipulation with the closest possible alignment. This feature reduces the lens separation to the minimum and obviates the slightest possibility of faulty manipulation. Each disc is sharply knurled on the edge and can be rotated with the slightest amount of pressure.

All focal numbers excepting those indicative of the lenses exposed at the sight opening, are concealed and the equivalent of any lens combination is determinable at a glance. The numbers are all large and very distinct, those representing the minus quantities, being so indicated.

The instrument is provided at the back with an adjustable forehead rest, and has a shield on either side for preventing the face of the patient from touching the discs. Each shield is provided with a clip for the reception of a supplementary lens if required. The instrument has the regular revolving gear-driven cell for holding the cylinders, the double rotary prism the multiple red Maddox rod, the Stevens phorometer with spirit level, a graduated near-point test, and can be finely adjusted for pupillary variations.

For rapid and accurate work this instrument meets the requirements exactly and is well adapted to both the objective and subjective methods, being especially valuable in retinoscopy. It is regularly made in the  $1\frac{1}{2}$  inch size, but can be adapted to hold  $1\frac{1}{4}$  inch when required, and is furnished complete with either wall bracket, floor stand or chair bracket, as desired. Price, complete, £21.

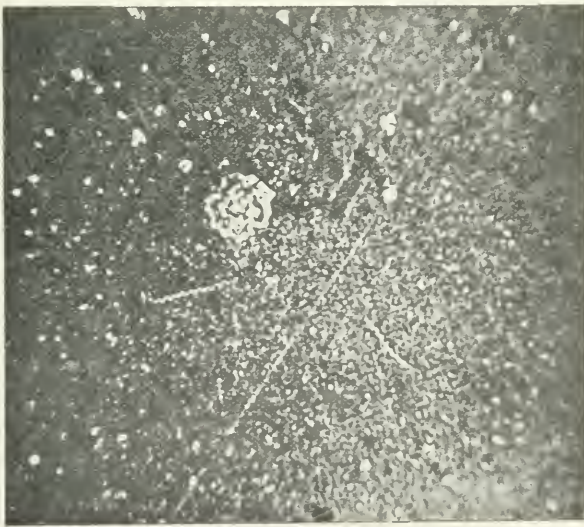
The "Meyrowitz Bulletin" can be obtained on application to E. B. Meyrowitz, 1A, Old Bond Street, London.

## X.—THE DIAGNOSIS OF EARLY SYPHILIS.

Shennan, T.—Recent work on the diagnosis of early syphilis.  
*Edinburgh Medical Journal*, May, 1910.

Shennan, of Edinburgh, points out that much as the Wassermann reaction is of use in tertiary manifestations of syphilis, so the demonstration of the spirochæta is of importance in confirming the clinical diagnosis of the disease in the primary and secondary manifestations. For demonstration of the spirochæta two methods have so far been available: (1) the staining methods of Leishman, Giemsa, and others; and (2) the method of dark-ground illumination. To these we may now add a third, the Indian ink method, which it is the object of the present communication more particularly to describe. It consists in mixing the fluid which contains the organisms of syphilis with Indian ink, and spreading the mixture in a thin layer on the surface of a slide. The ink produces a dark background, against which the spirochaetes stand out sharply as unstained colourless filaments. This simple method was introduced by Burri in 1909. Details are described by Shennan as follows:

“Liquid Indian ink as ordinarily retailed is diluted about one part in six or ten volumes of distilled water, sterilised in test tubes and allowed to sediment for two weeks. The slides used must be absolutely clean and free from fat. The culture material or the serous body fluid is suspended in a drop of sterile water. A small platinum loopful of this suspension mixed intimately with a small drop of the ink is spread, in as thin a layer as possible, on the surface of a slide and allowed to dry. This may then be examined directly with the oil immersion lens, or covered with a No. 1 cover glass, a drop of cedar oil being used as mounting medium. Burri's results were uniformly good, the picture obtained resembling a photographic negative in the darkness of the background and clearness with which the micro-organisms stood out. He examined many bacteria, and with ease demonstrated the spirochæte of syphilis.”



Photomicrograph (by Wm. Watson) enlarged, of spirochæta pallida,  
in film from primary sore. (Burri's method)

Speaking from personal experience, Shennan lays stress upon the necessity of attention to detail in carrying out Burri's method. For example, care should be taken in respect of the dilution of the material for examination,

and of the prolonged segmentation of the Indian ink, so as to obtain as uniform a background as possible. The background should be almost homogeneous, and of a light-brown colour. Preparations with a coarsely granular background should be at once discarded. When these points are attended to, the demonstration of the spirochæta pallida is simpler and consumes less time than when the Giemsa and Leishman stains are employed. It is much easier than the method of dark-ground illumination, which, besides, calls for extra apparatus.

Shennan remarks that it is essential that no local treatment of the lesion has been employed. The sore is cleansed with sterile wool, its margin scraped with a sharp spoon, and, when bleeding has stopped, films are prepared from the serous fluid which exudes. Shennan prefers to prepare these films by the method of Gins, who employed both Grüber's ink and the ink made by Günther Wagner. He came to the conclusion that a one in ten dilution produced too thin a layer, and that a half strength of ink was the best.

SYDNEY STEPHENSON.

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## XI.—LATE COMPLICATIONS OF CHLOROFORM ANÆSTHESIA.

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**Morax, V.**—Late complications of chloroform anæsthesia in eye operations. *Recueil d'Ophthalmologie*, janvier, 1910.

**Morax**, of Paris, records two deaths occurring within twenty hours after operation on the eyes :—

1. A baby, aged 13 months, was anæsthetised with a few whiffs of chloroform for a bilateral sclerotomy for infantile glaucoma. The traumatism was insignificant, and there was no vomiting or any other trouble from the anæsthetic. In the evening the temperature rose to 100·5° F. At night he was less quiet than usual, and he died, without convulsions, at six o'clock next morning. An examination of the organs revealed nothing abnormal beyond a slight discolouration of the liver.

2. A baby, aged 28 months, suffering from congenital cataract and slight microphthalmos, was anæsthetised without any trouble or complication, as in the first case, for needling. She became a little agitated in the afternoon, and in the evening the temperature rose to 103·2° F. She developed delirium with screaming and stoppage of respiration. She died at one o'clock in the morning. Autopsy revealed no abnormality of any organ.

In these cases infection and operative shock can be excluded from the causal possibilities. On referring to the literature of the subject—particularly the records published by English observers—Morax was struck by the relatively large number of cases which were operated on for some congenital abnormality.

The symptoms developed a considerable time after the administration of the anæsthetic, but almost always within the first twenty-four hours. The most common symptom is vomiting, appearing on waking or two to four hours after. In very young children, as in the author's cases, this symptom may not appear. The rise of temperature is almost constant, and varies from 100° F. to 103·2° F. Excitement, screaming, and delirium have often been noted. Death, sudden or after a period of coma, may supervene within seven hours to six days. The pathogenesis is indefinite. It has been regarded as due to some direct or indirect effect of the chloroform on the hepatic cells—perhaps a

chloroform hæmolytic. Morax suggests that the liver may be predisposed to such an action by chloroform by the action of the treponema, as the initial diseases or defects were attributed to hereditary syphilis in most of the cases.

J. JAMESON EVANS.

## XII.—COLOUR BLINDNESS.

The case of Mr. Trattles, *Lancet*, January 29th, 1910.

We quote here the *Lancet's* version of the judgment of Sir Francis Mowatt in this case:—

Sir Francis Mowatt, in the course of his judgment, said: I next come to the experiments which Sir William Abney conducted in my presence, and which were on the same lines as those above described. In some instances I found them difficult to follow, and I was precluded from asking questions since they and their answers might have assisted Trattles to guess. I should add that the shorthand notes, taken under great difficulties and in complete darkness, do not in every instance agree with my own impressions. I gathered that when a white, a red, or a green light of the colour, size and brightness of a ship or coast light was shown upon the screen, Trattles distinguished it correctly. When two or more lights were rapidly varied or superimposed one upon the other he became confused and made some mistakes as between green and red, but these were to some extent explained by the constant flickering and variation of the light, which made it difficult to distinguish the lighter shade. Moreover, the questions were not always put very clearly to the witness, who was in a state of some nervous excitement, and occasionally failed to understand them. Nevertheless, as I have said, the tests applied show clearly that Trattles's colour vision was defective.

Finally, as to the wool test. Out of a large heap of wool skeins of different colours Trattles was shown in succession skeins of light green, pink, red, purple, and yellow (their colours not being mentioned), and he was told to select from the heap skeins of corresponding colours and of various shades of those colours. He picked them out with deliberation, and frequently with hesitation. Some he examined carefully before selecting or rejecting them. The following are the results:—

*Green.*—He picked seven green (two almost blue) and two browns.

*Pinks.*—He picked nine pinks, of which two were so dark as to be almost a brown red.

*Reds.*—He picked seven reds, one almost pink.

*Yellows.*—He picked six yellows, one almost a light green.

*Purples.*—He picked four purples and one blue-green.

On being shown the purple Trattles said that colour was never used at sea.

As in the case of the spectrum examination, the test clearly showed that Trattles had a defective colour vision, but I do not think that the selection of wools by daylight, as I saw the test applied, affords a conclusive test of a man's ability to pick up lights at night under the open sky, or to distinguish between the three colours in use at sea.

In conclusion he says: On a very careful consideration of this evidence I have come to the conclusion that Trattles is not incompetent from colour-blindness to discharge the duties of a mate, and I direct that his certificate as second mate be returned to him.



## XIII.—PHLYCTENULAR AFFECTIONS OF THE EYE.

- (1) Stephenson, Sydney and Jamieson, J. A.—A note upon phlyctenular affections of the eye. *British Medical Journal*, April 16th, 1910.
- (2) Stephenson, Sydney.—Phlyctenular affections of the eye, with particular reference to pathogeny. *Medical Press and Circular*, April 27th, 1910.

(1) Stephenson and Jamieson, of London, have employed von Pirquet's tuberculin test in twenty children suffering from various kinds of phlyctenular disease and have obtained a positive result in every instance. Of their cases 50 per cent. presented clinical signs of tuberculosis, medical or surgical, while about 75 per cent. gave a family history of tubercle.

(2) Stephenson, of London, points out that phlyctenular affections account for from 20 per cent. to 25 per cent. of the patients who come to the ophthalmic department of a children's hospital. The disease, however, is as uncommon in babies at the breast as it is after the advent of puberty. Females are particularly liable. In describing the symptomatology of the disease Stephenson draws special attention to the occasional occurrence of phlyctenulæ upon the palpebral conjunctiva, which usually take the form of small greyish ulcerations, lying near the free edge of the eyelid. He then passes forward to discuss the pathogeny of the disease. He gives the evidence, clinical and experimental, which leads him to regard phlyctenular disease as peculiar or almost peculiar to tuberculous subjects. Among 669 patients affected with phlyctenular affections, he found tubercle in 214, or 31.98 per cent. Stephenson agrees with some other authors in believing that phlyctenules of the eye are comparable with lichen or acne scrofulosorum—that is to say, papular eruptions of the skin which, develop upon a tuberculous soil, which cannot usually be successfully inoculated into guinea-pigs, and in which the tubercle bacillus has seldom been found. He suggests that obvious tuberculous affections of the skin, as scrofuloderma, lupus, and Bazin's disease, bear the same relationship to tuberculosis of the conjunctiva as is borne by lichen and acne scrofulosorum to phlyctenular disease. As to the analogy between phlyctenular and eczematous or impetiginous eruptions of the skin, Stephenson quotes the following figures obtained by him:— 1. *Evelina Hospital, London*.—In 100 consecutive cases of phlyctenular disease eczema existed in 58 per cent. 2. *Queen's Hospital for Children, London*.—In 529 cases of phlyctenular disease, eczema was present in 49.33 per cent. 3. *Ophthalmic School, Hanwell*.—In 136 cases of phlyctenular mischief, eczema was present in 83 per cent. Stephenson has found analogous changes in mucous membranes other than the conjunctiva, as, for example, those which line the nose, mouth, and palate, and he argues that the existence of such changes strengthens the view according to which phlyctenular disease is believed to be eczema of the conjunctiva. He concludes that phlyctenular disease is due remotely to the tuberculous diathesis, and immediately to an eruption of eczema or impetigo upon the surface of the eyeball. Anything which tends to lower general or local resistance may induce the disease in a predisposed subject.

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#### XIV.—ANTHRAX.

- (1) **McMurray, S.**—Two cases of anthrax. *Birmingham Medical Review*, September, 1909.
- (2) **Herley, Randal.**—Eight cases of external anthrax. *Lancet*, December 4th, 1909.

(1) **McMurray**, of Birmingham, reports the case of a female brushmaker, aged 21 years, admitted with anthrax of the lids of the left eye, accompanied by severe local and general symptoms. Recovery after two injections of Slavo's serum, but plastic operation subsequently necessary to remedy the resulting ectropion.

A few weeks after the admission of this patient, a young man from the same factory presented himself with malignant pustule on the right side of his forehead.

SYDNEY STEPHENSON.

(2) **Herley**, of Dewsbury, reports eight cases of external anthrax, in one of which the pustule was on the upper eyelid. The communication deserves attention from those more especially who practise in districts where the disease only occurs very rarely. The special interest about this particular case—a severe one—is that recovery was due to the repeated subcutaneous injection of Slavo's serum. In his remarks on the eight cases the author says that before Slavo published the results of serum-therapy, the treatment usually recommended was excision of the necrotic patch and of the infiltrated tissues around, followed by the application of pure carbolic acid or the actual cautery. Since 1905, twelve cases of cutaneous anthrax have been treated in Dewsbury, nine in the General Infirmary and three by private practitioners. In six cases the pustule was excised and serum was injected, one case was treated with serum and three injections of carbolic acid solution, and five cases with serum alone. One case died out of the twelve, equal to 8·3 per cent. The case referred to above was of a virulent type, and the patient received 190 c.c. of serum in eight days.

ERNEST THOMSON.

#### XV.—CONCRETIONS IN THE LACRYMAL CANALICULI.

- (1) **Derby, George S.**—I. Concretion in the lower canaliculus without characteristic signs. II. Two cases of concretion in the upper canaliculus. *Archives of Ophthalmology*, November, 1909.
- (2) **Assicot.**—Mycoses of the lacrymal canaliculi. (*Les mycoses des canalicules lacrymaux.*) *L'Ophthalmologie Provinciale*, février, 1910.

(1) In two of the cases the diagnosis of concretion in the canaliculus seems to have been made by **Derby**, of Boston, rather by good luck than by anything else. In one of them a long-standing severe conjunctivitis cleared up with remarkable rapidity after removal of the concretions. Cultures showed an organism similar to that found in cases previously described, belonging probably to the streptothrices.

ROSA FORD.

(2) **Assicot**, of Rennes, removed from the upper and the lower canaliculus of a woman, aged 45 years, a number of soft, yellowish concretions, which had given rise to a certain amount of purulent discharge from the affected eye.

Cure speedily came about. The concretions, examined by Hodin and Bourdinière, were believed to consist of the streptothrix Försteri and not of actinomyces. Since cultures were not made, the point, however, must be regarded as undecided.

SYDNEY STEPHENSON.

## XVI.—REMEDIES.

- (1) Shoemaker, J. F.—Ætiology and treatment of certain forms of conjunctivitis. *American Journal of Ophthalmology*, January, 1910.
- (2) Zahn, Ervin.—Experimental and clinical experiences with ionic medication. (Experimentelle und klinische Erfahrungen mit der Iontotherapie.) *Klin. Monatsbl. f. Augenheilkunde*, Januar, 1910.
- (3) Junius. — Remarks on the tuberculin treatment of the eye. *Ophthalmology*, January, 1910.
- (4) Rollet, E., and Aurand, L.—An experimental trial of ocular tuberculin therapy. (Essai de tuberculinothérapie oculaire expérimentale.) *Revue Générale d'Ophthalmologie*, 31 janvier, 1910.
- (5) Kerry, Richard.—Five cases of tuberculosis of and about the eyes. *Montreal Medical Journal*, March, 1910.
- (6) Dor, Louis.—About leukin, the new-comer among the bactericidal bodies of the serum. (La Leukine, le dernier venu parmi les corps bactericides du sérum.) *La Clinique Ophthalmologique*, 10 mars, 1910.
- (7) Jocsq, R.—The treatment of trachoma. *La Clinique Ophthalmologique*, 10 mars, 1910.
- (8) Davidson, James Mackenzie.—Radium and some of its physical and therapeutic properties. *Bristol Medico-Chirurgical Journal*, March, 1910.
- (9) Farnarier, F.—Acoin oil as an analgesic in the treatment of trachoma. *La Clinique Ophthalmologique*, 10 avril, 1910.
- (10) Bronner, A.—Pyocyanase in the treatment of hypopyon-keratitis. *Ophthalmological Society*, May 5th, 1910.

(1) Shoemaker's paper is entirely taken up with certain cases of conjunctivitis, in which he has convinced himself that auto-intoxication is the cause. He differs from the opinion that, with the exception of diphtheritic and phlyctenular conjunctivitis, all conjunctival inflammations are essentially local. Then follows Albu's classification of auto-intoxications and a reference to the various fermentative processes in the alimentary canal. These may give rise to products which irritate the eliminative organs, the lungs, kidneys, and skin, and lead to well-known symptoms. What is more natural than that the conjunctival mucous membrane should be irritated and inflamed by the circulation through it of blood laden with these toxic substances? In several cases of a

chronic conjunctivitis that persisted in spite of local treatment, the occurrence and recurrence of the conjunctival inflammation at the same time as were present marked constitutional symptoms of auto-intoxication, left no room for doubt as to the general condition being responsible for the inflammation of the conjunctiva. Treatment aimed at improvement of the condition of the alimentary canal cured these cases practically without local treatment.

ERNEST THOMSON.

(2) **Zahn**, following in the wake of R. Wirtz (*see* THE OPHTHALMOSCOPE, 1909, page 282), investigated the effects of zinc-, iodine- and chlorine-ions on the cornea of rabbits and in various pathological conditions of the human eye. Zinc proved a powerful caustic agent, destroying, not only the epithelium, but, in larger doses, also the deeper tissues of the cornea. The extent of the necrotic area, which has at first a dry greyish-white appearance, corresponds with the size of the electrode. The slough separates after 27 hours, the cornea assuming an œdematous aspect. Sections through the cornea at various stages show, as the immediate result of the application, necrosis and shedding of the epithelium, and a considerable thinning of the corneal tissue. Twenty-four hours later, the epithelium has disappeared and the corneal tissue is swollen to twice its normal thickness. Chlorine and iodine possess a much milder action, which does not go beyond the epithelium. The clinical results were as follows.—Of 17 cases of pneumococcal ulcer with hypopyon and iritis, 14 were cured with zinc-ionisation: the doses varied between 1 m.a. 1 minute and 2 m.a. 2 minutes. A single application sufficed in five cases, two were required in ten, and three in two cases. Ten cases of diplobacillary-ulcers were all healed by zinc-ionisation, after one to four sittings. Six cases of simple and the same number of dendritic ulcer were cured rapidly by the same method. Five cases of interstitial keratitis e lues hereditaria were not benefited by iodine-ionisation. The same negative result followed chlorine-ionisation in five cases of corneal opacities and four cases of scleritis. But four cases of blepharitis ulcerosa were speedily cured by zinc-ionisation ( $2\frac{1}{2}$  m.a.  $2\frac{1}{2}$  minutes to 4 m.a. 4 minutes).

C. MARKUS.

(3) **Junius** admits that there is no absolutely best tuberculin, and that there are no definite rules for its use; indeed, he states that "the correct application of tuberculin is an art which must be learned." In the present short paper he states clearly some conclusions at which he has arrived as the result of extensive use of the method. All ophthalmologists, he says, are agreed that in ocular affections we should employ only the mild form of treatment, avoiding local reaction. In his opinion, the new tuberculin (T.R.) is the best, but even with every precaution, it is occasionally not tolerated. He therefore recommends Beraneck's tuberculin, the action of which is mild and more easy of regulation than that of tuberculin T.R. The mildness of the action is rather an advantage than a drawback, and he recommends that the injections be not given oftener than twice a week. He conceives of the action of these tuberculins as a stimulation of anti-toxin formation, by the introduction of small doses of toxin. It will therefore be understood that their curative effect will occur only if the treatment is employed in an early stage. Summing up, he says that the results so far obtained are favourable; failure occurs in some cases for reasons not yet understood; but even now tuberculin is a valuable remedy.

A. J. BALLANTYNE.

(4) In view of the encouraging clinical results of the use of tuberculin B.E. by von Hippel and Davids, **Rollett and Aurand** (of Lyons) tested the therapeutic action of this tuberculin on a series of rabbits inoculated in the anterior chamber with various cultures of tuberculosis. The details of the experiments carried out with the various standard dilutions of tuberculin B.E.,



and of the control experiments, must be sought in the original ; the conclusions only need be referred to here.

1. Koch's new tuberculin B.E., injected in weak doses very slowly progressive up to 50 cubic millimetres (per kilogramme of live weight) of pure B.E. does not appear to be injurious to the rabbit, for in most cases the weight increases or remains stationary.

2. The temperature reactions to the pure tuberculin in a dose of 50 cubic millimetres per kilogram of live weight, at first *nil*, appear only after a month of treatment (at the fourth injection) and remain always very variable from 0.3 to 1 degree (C.) in spite of the identity of the dose.

3. The temperature reactions are proportional to the virulence of the tuberculosis rather than to the quantity of tuberculin injected, each animal reacting in its own way to the tuberculin.

4. The temperature reactions to tuberculin seem to increase with repetition of the injections. The tuberculous rabbit thus acquires a greater sensitiveness to tuberculin under the influence of repeated injections even of the same dose. This is a phenomenon of anaphylaxis.

5. In consequence of this anaphylaxis for tuberculin, and of the special thermal reaction for each animal, the tuberculin and therapeutic *technique* should vary for each animal, and the doses of tuberculin should perhaps be diminished instead of being increased in course of treatment.

6. Tuberculin B.E. has a very slow action on tubercles ; it seems, however, notably to hasten the retrogression of tubercles of the iris, in the proportion of sixteen to twenty-six days.

(This really means, as reference to the text on page 9 will show, that in one series retrogression began in 72 days, as compared with 88 days for the controls, and in another it began in 55 days as compared with 81 days for the controls, *i.e.*, 16 and 26 days are the differences between the experiment and the control in each series.)

But even in the cases of complete local cure, generalization of the tubercular disease was not prevented.

7. In the control animals tubercles of the iris might cure spontaneously, but, here also, just as in the rabbits treated, there was generalization in the liver in all the cases.

ERNEST THOMSON.

(5) **Kerry**, of Montreal, advocates the treatment of ocular tuberculosis by the hypodermic injection of iodoform, four grains once or twice a week, according to the severity of the case. The particular preparation employed is a mixture of 20 per cent. powdered iodoform with paraffin oil which contains 1 per cent. of carbolic acid. Kerry gives particulars of five cases (tubercle of lacrymal sac, one, and keratitis, four) treated more or less successfully by these means.

SYDNEY STEPHENSON.

(6) This article synthesises the paper by R. Schneider in *Archiv für Ophthalmologie*, LXXIII, 25th Januar, 1910, on the subject of "leukins," for abstract of which see THE OPHTHALMOSCOPE, May, 1910, p. 382. **Louis Dor**, of Lyons, is a past-master in the art of clear analysis and description, and this short account of these newly discovered bodies is an example of that art.

ERNEST THOMSON.

(7) In this article **Jocqs**, of Paris, refers freely to that by Gorse in *Revue Générale d'Ophthalmologie* for December, 1909 (See THE OPHTHALMOSCOPE, March, 1910, p. 238), with which in the main he agrees. Jocqs, however, prefers protargol to silver nitrate in the first stage. As to copper sulphate, Jocqs only uses this when, as the result of other treatment of a surgical nature, there remain but few granulations. The crystal should not be used at all on account of the intense pain it produces, even when

superficially applied. The following copper stick (Ginestous' Crayon) can be freely used without fear of much pain, after cocaine has been instilled :

Sulphate of copper	...	...	1 gramm.
Orthoform	...	...	0'50 "
Holocaine hydrochlor.	...	...	0'40 "
Gum tragacanth	...	...	0'10 "
Water	...	...	q.s.

To be made into a pencil 5 centimetres long.

Jocqs agrees that excision of the upper cul-de-sac should be given up entirely. He sums up the treatment thus.—“ In acute, luxuriant, raspberry-like granular conjunctivitis, after the acuteness has been reduced by protargol, and the use of yellow oxide ointment if there is pannus, we may use light scarification and *brossage*, then medicamentous massage with the fingers (using some powder which is antiseptic and traumatic in effect, such as a mixture of calomel and sugar *en poudre non porphyrise*), and, finally, repeated cauterisation with the crayon of Ginestous. In old-standing cases with recurrence in patches, *grattage* or destruction with the galvano-cantery is to be followed by massage and sulphate of copper.”

ERNEST THOMSON.

(8) **Davidson**, of London, after a lucid description of the physical properties of the several rays given off by radium, passes on to discuss the employment of that extraordinary substance in medicine. His experiences date from April, 1903, when he obtained a couple of small glass tubes, each believed to contain five milligrammes of radium bromide. His first case was in a patient with a rodent ulcer below the right lower eye-lid. The patch, which measured one inch vertically by  $\frac{3}{4}$  inch horizontally, was completely cured by five applications of the radium. Experiments were continued with tuberculosa verrucosa, recurrent carcinoma, rodent cancer, in most of which the new agent succeeded in putting an end to the disease. Since then a large number of cases has been treated. Davidson has found that small epitheliomata of skin and tongue can be cured, while moles, naevi, and “port wine” stains can be removed. It is interesting to note, also, that X-ray dermatitis is amenable to the radium treatment.

As regards eye affections, radium “has yielded astonishingly favourable results in many cases,” some of which have already been reported (see THE OPHTHALMOSCOPE, 1909, p. 790). It may be looked upon as one of the most important therapeutic agents in superficial diseases of the eye. Radium was used by Davidson in four cases of spring catarrh, in each instance with success. The first case, treated in the year 1906, still remains well. In hypopyon-ulcer, corneal ulcers generally, episcleritis, and pterygium “it has yielded results superior to any other known method of treatment.” But so far radium emanations have failed to benefit the deeper diseases of the eye.

In treating lesions of the eyelids with radium the cilia must be protected by means of lead foil, and it is also advisable to protect the unaffected parts by means of the same material covered with thin rubber. Severe burns may result if the fingers of the operator are not protected by wrapping the upper part of the radium tube in several folds of lead foil. Lastly, it may be noted that in Davidson's cases, which were treated by radium bromide enclosed in sealed glass tubes, the rays utilised were all the *gamma* rays, and most of the *beta* rays, but none of the *alpha* rays.

SYDNEY STEPHENSON.

(9) **Farnarier** (Marseilles) prefers the use of copper sulphate crystal in the treatment of trachomatous granulations. But the method is terribly painful. He has found, however, in agreement with Pflugk, that acoin can be used as a conjunctival analgesic if an oily solution be employed. Farnarier has had great satisfaction from the use of acoin oil in the treatment of trachoma. It is

necessary to use the *base* not the *hydrochloride*. This is put up by the manufacturers in 1 % solution. It is necessary, also, to apply the acoin *after* the use of the caustic, as the oil prevents sufficient contact between the copper crystal and the conjunctiva if it be applied beforehand. Further, acoin is not harmful to the corneal epithelium, and the patient can use it at home until the pain subsides.

ERNEST THOMSON.

(10) Pyocyanase, a brownish fluid prepared from bouillon cultures of the *Bacillus Pyocyaneus*, has been employed by **Bronner**, of Bradford, in the treatment of six cases of hypopyon-keratitis. In some recent cases the author had applied 50 per cent. pyocyanase drops to the affected eye every hour. In every instance pain had disappeared in the course of a day or two, and the ulceration had healed more quickly and with less consequent opacity than under the usual methods of treatment by the galvano-cautery, carbolic acid, and subconjunctival injections. It is to be noted that in addition to pyocyanase, Bronner employed atropine drops and hot fomentations.

SYDNEY STEPHENSON.

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## BOOK NOTICES.

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**Colour Blindness and Colour Perception. The International Scientific Series. Vol. LXXI.** By F. W. EDRIDGE-GREEN, M.D., F.R.C.S.  
London: Kegan Paul, Trench, Trubner & Co., Ltd. 1909. Price 5s.

The second edition of Dr. Edridge-Green's book on Colour Blindness appears at the psychological moment, when the author's long fight with official inertia and with the obsolete traditions of the scientific schoolmen seems likely to be crowned with victory. For over twenty years Edridge-Green has maintained that the theories of colour perception propounded by Young, Helmholtz, and Hering do not account for the known facts of colour vision and its disorders, and that the time-honoured tests devised by Holmgren and others are quite insufficient to unmask many cases of serious colour blindness. After being scouted by the officials of the Board of Trade, laughed at, nay, almost refused a hearing by learned societies, he now has the satisfaction of knowing that his theory of colour perception has been partly accepted by most thinking men who have sufficient expert knowledge to form an opinion; and that now even the railway companies are beginning to realize that an engine driver may be dangerously colour blind, and yet succeed in passing their stereotyped inefficient tests, and that some of them have at last decided to use the Edridge-Green colour perception lamp.

The whole basis of the author's theory depends upon the hypothesis of psycho-physical perception, which he explains in the third and fourth chapters of the book. These chapters are somewhat metaphysical and demand careful reading. The author points out that as colour perception is developed at first the colours most widely separated in a physical series are perceived—that is violet and red. At each end of the previously grey monochromatic spectrum a tinge of colour appears, red at one end, violet at the other. As perception improves the neutral band diminishes and disappears. When this has happened the two colours seen are yellow and blue. This reasoning is difficult to follow. The author does not make it at all clear exactly how, when, and where the two extreme colours, red and violet, disappear, and are replaced by blue and yellow. It appears that the ordinary dichromic

individual who has only two colours sees blue and yellow, which accords with the theory. Later on, as colour perception improves, red, green, and violet are seen as in the trichromic; in other words, the blue and yellow have disappeared and the red and violet have reappeared.

The next chapters describe the physiology of the retina and the normal perception of colour. The visual purple and its functions are very briefly alluded to, but more is said about it in the appendix. Chapter VIII studies the physiological phenomena of colour, complementary colours, after-images, simultaneous contrast, successive contrast, irradiation, and colour fatigue. In Chapter IX. the Young-Helmholtz, and Hering theories of colour perception are criticised, and it is shown that neither of them accounts for all the phenomena of colour vision. The main part of the book is devoted to the various kinds of colour blindness. The ordinary individual has six units of colour, but a very few can perceive all the seven colours of the spectrum. Probably not more than one in two or three thousand belong to this class and can see the indigo band.

The five-unit man has lost his orange band, he confuses orange with red, pink, and brown. The four-unit has lost his blue colour and only has red, yellow, green, and violet. The three-unit has lost one more colour, yellow; he only sees red, green, and violet. In the two-unit man, the dichromic, there are only two colours left, but these are not as one would expect, red and violet, but yellow and blue!

The chapter on accidents through colour blindness is very interesting and thoroughly demonstrates the necessity for reform in the methods of examining railway employees and sailors. The description of the signals used on our railways has, however, not been re-written, and however accurate it may have been 25 or 30 years ago, is now quite misleading. The Great Western and the London and North-Western only use two colours for their main line semaphores, red and green. Red is "danger"; green "all right." No green is used for caution, and no white for "all clear." The white light for "all clear" was abolished on all English railways some 20 years ago. The green and purple signals used for ground signals on the North-Western Railway are now being replaced by green and white lights, the white being a danger signal.\* There are no such railways in England as the London, Chatham and Dover, and the South Eastern, and so a description of the methods they employ for sight-testing are not very instructive.

The book gives the impression of having been reprinted rather than revised. An appendix is added, which contains more recent facts.

It would be well if, in a subsequent edition, the whole book were reconstructed and brought up to date. The long list of figures, headed "Pocket Test" might well be deleted, for unless the reader has the "Pocket Test" before him they have no meaning whatever. T. HARRISON BUTLER.

**Die Bedeutung der Augenhygiene für den Staat mit besonderer Berücksichtigung der Wehrfrage.** (The importance of attention to the eyes from a military point of view.) Von DR. MED. FRANZ HEILBRON, Augenarzt in Breslau. Mit 4 Abbildungen im Text. Berlin: S. Karger. 1910, pp. 188.

This pamphlet is partly written for the profession, but chiefly to instruct the public and to press upon them the importance of preserving the eyes for school, civil, or military life, and especially in preventing myopia. Numerous as have

\*An account of the history of modern railway signals is given in the *Railway Magazine*, of May, 1910.



been the investigations that have been made upon this disease and intimately as its microscopic characteristics are known, but little certainty has been attained in regard to its ætiology. The results of the observations of Cohn and others, scarcely enable us to say more than that "near" or "close" work, favours its occurrence or intensifies it when present and that heredity plays a part. Of the frequency of its occurrence there can be no doubt. The statistics of myopia that have been collected up to the present time in regard to prognosis have the great defect, that they regard the disease in its different forms as representing but one affection, such statistics being on this account of no great value. The Author thinks it would be more advantageous to discard, in regard to prognosis the classification according to degree, and to consider the individual case on the basis of the efficiency of the organ. The preservation of complete visual acuteness for a long period of observation, for example, is of great importance in determining a favourable prognosis.

Myopia is most appropriately arranged under the three following heads :

- A.—Functional myopia (myopia resulting from school and near work) without hereditary predisposition.
- B.—Functional myopia with congenital or hereditary predisposition.
- C.—Pernicious myopia.

No noteworthy result has followed the contest with those degrees of myopia which impair the nation's power of bearing arms, notwithstanding the efforts that have been made.

The real means at our disposal for fighting myopia consists in the systematic and compulsory supervision of the eyes between the ages of 6 and 20 years. To the State belongs the duty of supervision up to the age of entrance to military life. The good result of supervision has been established by the author in the course of 15 years' observation. It is easy to render supervision compulsory, and the expense would be small. The mind of the public should be enlightened in regard to the dangers and disadvantages of myopia, and to the necessity in after-life of incurring the expense of glasses. It is false to make school life alone answerable for myopia, for myopia may supervene before, during, or after school life. Moreover, the home is to a certain extent responsible for the results. For those who suffer from pernicious myopia, education in special classes would be an ideal arrangement. They should be taught stenography at an early age. The schools conducted on the Berlitz system might with advantage be visited. The career adopted by myopes should be pursued under the advice of the ophthalmic surgeon. Dependent upon the kind and degree of myopia and the sharpness of vision, he thinks that glasses of — 8·5 D. may be worn by those entering military service without risk. Opticians should not be allowed to select glasses. Special attention should be paid to cases complicated by the existence of trachoma, scrofula, and tuberculosis.

A sensibly written *brochure* by a man who has had considerable experience and has profited by it.

HENRY POWER.

## NOTES AND ECHOES.

## Death.

THOMAS WINDSOR died at Great Budworth, Cheshire, on April 13th last. He had retired from the active practice of his profession many years ago, but few names were better known than his as an ophthalmic surgeon during the latter half of the nineteenth century. Windsor, among other appointments, was for many years surgeon to the Manchester Eye Hospital, and he also held the posts of ophthalmic surgeon to the Manchester Royal Infirmary and Lecturer on ophthalmology at the Owens College. We may recall the fact that he was once-time editor of our contemporary, the *Ophthalmic Review*. Mr. Windsor had attained the age of 69 years.

\* \* \* \*

## Central Midwives Board.

AT a meeting of the Central Midwives Board, on April 19th and 20th last, the names of four midwives were struck from the roll because, being in attendance as midwives at confinements and the children suffering from inflammation of the eyes, the women did not explain that the babies required the attendance of registered practitioners of medicine, neither did they hand to the relatives or friends present the form for summoning medical help, properly filled up and signed, as required by Rule E 19 (5).

\* \* \* \*

## Appointments.

MR. E. TRÉACHER COLLINS and Mr. J. B. Lawford have been appointed examiners for the Diploma in Ophthalmology newly instituted by the University of Oxford.

Mr. Richard Williams has been appointed oculist for the County of Carnarvon by the Education Authority.

Mr. A. H. Payan Dawnay has been appointed assistant surgeon to the Western Ophthalmic Hospital, Marylebone Road, London.

Mr. Frank Moxon has been appointed assistant in the refraction department for school children at the Hospital for Sick Children, Great Ormond Street, London.

\* \* \* \*

## Mr. J. R. Lunn's Retirement.

AT a meeting of the Marylebone Board of Guardians, held on May 9th, Mr. J. R. Lunn, who has held the post of Medical Superintendent of the Infirmary for the last twenty-nine years, tendered his resignation owing to ill-health. Amid many expressions of regret, the resignation was accepted by the Guardians. Mr. Lunn's interest in ophthalmology is well known. He has been a member of the Ophthalmological Society since the year 1883. He was recently the recipient of the honorary fellowship of the Royal College of Surgeons of England.

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## Ophthalmia Neonatorum.

THE movement for securing the compulsory notification of ophthalmia neonatorum grows apace. Wimbledon has recently come into line with the pottery towns in this respect, and so has the Stretford Urban District. It is to be hoped that the several public bodies concerned will make satisfactory arrangements for the treatment of the disease.

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American Academy of  
Ophthalmology and  
Oto-Laryngology

MR. SYDNEY STEPHENSON has accepted an invitation to deliver the address in ophthalmology at the annual meeting of this Association, which will be held in September next at Cincinnati, Ohio, U.S.A.

\* \* \* \*

The H. Knapp  
Testimonial Fund

It is proposed by the Section of Ophthalmology of the American Medical Association to establish a fund, to be known as "The Herman Knapp Testimonial Fund," to be applied in awarding an honorarium every year to meritorious or original work. The distribution will be limited to members of the Section or to guests invited by the executive committee of the Section. In addition to this, it is further proposed to set aside each year for a period of five years a sum that will be adequate to procure a bust of Dr. Herman Knapp. Remittances may be sent to Dr. A. E. Bulson, junr., Fort Wayne, Indiana.

\* \* \* \*

Continental Items.

It is announced that Professor Leber, of Heidelberg, will retire upon October 1st, 1910.

Quite a number of distinguished ophthalmologists attained their sixtieth birthday in the month of April last. Amongst the names may be mentioned those of Professor J. N. Oeller, of Erlangen, Professor H. Kuhnt, of Bonn, and Professor L. Königstein, of Vienna.

\* \* \* \*

A strange use for  
Pince-nez.

It has been reserved for a Canning Town artizan to discover a novel use for pince-nez. According to the tale unfolded at the West Ham Police Court recently, he attempted to commit suicide by severing the arteries in both arms with a piece of glass. He was immured in a police cell on a charge of assaulting his wife, and as he seemed quiet and gave no trouble, he was allowed to retain a pair of pince-nez he happened to be wearing. Alas! all was not as it seemed. Soon after midnight he was found lying on the floor in a pool of blood, the result of severe wounds in both wrists made with the broken glass of his pince-nez.

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